The association between the drug users' housing status and their drug use, health, well-being and motivation to change

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Disclaimer statement

I hereby confirm that the work I have presented as my thesis is entirely my own work. Reference to, quotation from and discussion of the work of any other person has been correctly acknowledged within the work in accordance with the University of Leeds guidelines for the production of a thesis.

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Abstract

There is a high prevalence of drug use among homeless individuals, which is associated with a broad range of negative outcomes. Existing studies on drug use and homelessness do not provide a comprehensive understanding of factors that may be relevant to drug users. Importantly, none of these studies investigate the needs and problems of drug users who may be at risk of homelessness or in unstable housing conditions.

In order to address the gap in literature, the current research utilised a cross-sectional research design, utilising structured interviews and questionnaires to compare illicit drug users who were stably housed, unstably housed or homeless. Studies 1 and 2 compared drug use behaviour, quality of life and health in 109 drug users and Study 3 compared motivation to change and self-efficacy in 91 drug users. The findings revealed that homeless drug users reported higher levels of drug dependency, greater frequency and amount of drug use, lower quality of life, and worse physical and psychological health as compared to stably housed counterparts. Additionally, homeless drug users despite recognising their drug problems, experienced greater uncertainty and doubted their ability to change the problem behaviour. The overall results indicated that unstably housed drug users were mostly similar to stably housed drug users on drug use behaviour and motivation to change, except for psychological health, where they were similar to homeless drug users on severity of depression, anxiety and stress.

Understanding these differences can assist in identifying some of the specific challenges faced by drug users in variable housing conditions. The findings of the research underscore the need for targeted motivational and psychological interventions that take into account the heterogeneity of drug users living in variable housing circumstances.

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Abbreviations

ACE	Adverse childhood experiences
DSM	Diagnostic and statistical manual.
GAD-7	Generalised anxiety disorder
HP	Housed with problems or unstably housed
ICD	International classification of diseases
IDU	Injecting drug users
NDTMS	National drug treatment and monitoring system
NFA	No fixed abode
NHP	No housing problems or stably housed
OST	Opiate substitute treatment
PHE	Public Health England, now under Office for Health Improvement and Disparities
PHQ-9	Patient Health Questionnaire
PSS-10	Perceived stress scale
QoL	Quality of Life
SE	Self-efficacy
SUD	Substance use disorder
TOPS	Treatment outcome profile survey
TTM	Transtheoretical model of motivation
WHO	World Health Organisation

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CHAPTER 1: Introduction

The chapter provides an overview of substance misuse as a problem internationally and nationally, where the UK continues to face significant challenges owing to the multidimensional impact of substance use disorders on society and drug misusers. The chapter explores the main theoretical underpinnings of addiction with an emphasis on providing alternative but complementary explanations for the relationship between addiction and housing circumstances. The significance of effective SUD treatment and motivation to change is highlighted. The limited literature on housing circumstances of drug users is explored whilst identifying gaps in comparative studies on homeless and non-homeless drug users. The chapter concludes with a presentation of the aims and objectives of the research programme.

1.1 Background

1.1.1 Global prevalence of substance use

Approximately 275 million people worldwide have used addictive substances such as alcohol, nicotine or illicit drugs in the previous year (UNODC, 2021), equating to 5.4% of the world population aged between 15-64 years. However, not all individuals who use substances develop a substance use disorder (SUD) or feel impelled to use substances despite harmful consequences to both health and social well-being (DSM-V-TR, APA, 2022). It is estimated that 36 million people worldwide suffer from SUD indicative of harmful use, dependence and the need for treatment (UNODC, 2021). In addition to the harm caused by substance use, the recent COVID-19 pandemic had a detrimental impact on both illicit drugs and drug users such as reduction in supply and shortages in availability leading to a reduction in purity and increased adulteration of drugs. The inconsistency in the quality of drugs and increased risk of infection and overdose was highlighted among homeless drug users (Black, 2020).

1.1.2 Prevalence of substance use in the UK

In the UK, approximately 2.7 million people had taken an illicit drug in the previous year (PHE, 2022), where heroin and crack-cocaine remained the most problematic substances. Cannabis was the most popular drug, whereas the use of amphetamine and cocaine had declined during the pandemic. Interestingly, although the overall prevalence of drug use reported in the UK remained stable, the UK continued to have the largest opioid-using population in Europe. An estimated 300,000 individuals took opiates or crack cocaine in the previous year (Home Office, 2021).

A report in the UK (Black, 2021) indicated that whilst the use of other illicit drugs such as amphetamine had declined, the consumption of opiates and crack had increased. Studies suggest that the consumption of opiate and crack was strongly correlated with deprivation, and areas in the North of England with higher rates of deprivation had higher rates of problematic opiate and crack use (Black, 2021; Fischer et al., 2006). The relationship between deprivation and its influence on drug use has not been explained further in the report.

It is important to note that published records and prevalence figures may have excluded individuals who did not declare their substance misuse or who might not be accessing treatment services for addiction. The British Crime Survey (Kershaw, 2008) acknowledged that certain subgroups such as the homeless were less likely to respond to population surveys and might have higher rates of substance use than those who participated in the surveys. It is likely that the most vulnerable drug users remain unaccounted for in national statistics, which would mean they are not catered for in terms of understanding their specific treatment needs.

1.1.3 Definition of substance use disorders (SUD)

The two main classification systems for psychiatric disorders are the World Health Organisation's International Classification of Diseases (ICD-11, WHO, 2018) and the American Psychiatric Association's Diagnostic and Statistical

Manual of Mental Disorders (DSM-V-TR, APA, 2022). Both ICD and DSM have widespread importance, and influence how disorders are diagnosed, treated, and investigated.

The ICD-11 defines substance dependence as a disorder of regulation of substance use, involving impaired control and increased priority for the substance, which arises from a repeated pattern of use and consists of a strong urge to use the substance. The ICD-11 has four mutually exclusive categories of substance dependence: hazardous substance use, episode of harmful substance use, harmful pattern of substance use and substance dependence. Whilst the ICD-11 categories are focused on the spectrum or range in use and disorder, the DSM-V-TR (APA, 2022) combined the previously separate categories of substance abuse and substance dependence into a single category of substance use disorder. The most recent version of DSM-V-TR defines substance use disorders as patterns of symptoms (i.e. eleven different criteria) resulting from the continued use of a substance such as experiencing cravings for the substance, neglecting other aspects of one's life and inability to reduce use despite experiencing negative consequences as a result of its use (APA, 2022). The criteria outlined by DSM-V-TR may be grouped into four categories: physical dependence, social problems, risk behaviour and lack of control over the substance use.

According to Public Health England (2017), substance addiction includes dependence and a compulsive preoccupation to seek and take a substance despite harmful consequences, where dependence is mostly perceived as physical dependency characterised by tolerance and withdrawal. For the purpose of this research programme, substance dependence, substance abuse, drug use, substance use disorder (SUD) and addiction will be used interchangeably.

In the UK, drug misuse is regulated by the Misuse of Drugs Act 1971 (Bradshaw, 1971), which provides a legal framework for drugs that can be considered harmful or misused, categorising substances into Class A, B and C. In the UK, penalty for drug related offences are dependent on the class of drug involved with Class A drugs attracting more serious consequences such

as longer prison sentences. The current research programme steered away from the criminalisation of drug use or users towards a more person-centred understanding of the problems experienced by drug users residing in different housing conditions. This decision was strongly influenced by the clinical experience of the researcher in the field of addiction, and aligned with the recommendation from recent research (Home Office, 2021) to identify problems faced by drug users in their recovery journey.

1.2 Factors that influence substance addiction

There are multiple factors that influence the trajectory of a substance abuser such as poverty, deprived living conditions, inaccessibility to education, poor mental health, exposure to high levels of stress, poor coping mechanisms and lack of reliable family and social networks (Baggett et al., 2013; Neale, 2001; Klee and Reid, 1998a).This section will review some of the theoretical models and perspectives that explain substance addiction whilst acknowledging that more often than not, there are a multitude of factors interplaying at once. It is important to understand the role of different factors so as to intervene and reduce risks, and more importantly to take these into account in enhancing understanding of drug use.

Although there are a plethora of possible explanations for substance use, the most commonly known perspectives are neuro-biological, behavioural and socio-cultural (Yates, 2014). This section will also include theories of functionality such as self-medication theory (Khanzian, 1985), owing to its wider appeal within addiction research.

1.2.1 Moral perspective

The moral model perceived individuals who consumed substances as sinful and in breach of social norms. Within the moral model, class and race prejudices combined with the popularity of the medical profession drove the negative perception of the substance misuser as a deviant-natured, weak-willed, immoral, sinful person who was opposed to the will of God (Klaue, 1999). However, the negative perception was mainly reserved for the lower classes (Klaue, 1999), for example the perception of a homeless drug user as

'lazy' or 'unmotivated'. The negative perception continues to influence the marginalisation of certain kinds of individuals, where studies suggest that homeless drug users perceived as 'resistant to treatment' may experience greater discrimination in accessing drug services as compared to those who were not homeless (Neale, 2001). Interestingly, although this model attributes the responsibility of developing the addiction to the individual, it does not attribute the responsibility of recovering from the addiction to the individual (Skewes and Gonzalez, 2013); the recovery from addiction was only possible through the will of a higher power. Organisations such as Alcoholics Anonymous (AA) and Cocaine Anonymous (CA) continue to operate with this rationale worldwide. Despite criticism and mixed reviews, there are a large number of individuals worldwide who attribute their success in maintaining abstinence to organisations such as AA and CA.

1.2.2 Medical model and neurobiological theories

The rise of modern medicine and positivist nature of science influenced the re-categorisation of drug addiction as a disease that was categorised within the remit of health professionals. From this perspective, the cause of problematic drug use was no longer attributed to the individual but rather to the drug itself where the drug user was perceived as a helpless individual with limited control over the 'demonic substance' (Heather and Robertson, 1997). Essentially, the medical disease model of addiction perceived drug addiction as a chronically relapsing condition caused by a psycho-biological predisposition to addiction. It suggested that repeated drug use changes the brain and these changes may account for behaviours typically shown by addicts e.g. craving (strong impulses to take drug) and reduced self-control therefore reduced ability to avoid acting on these impulses. Unlike the moral model, the disease model focused on the substance of use. One of the major criticisms of the brain disease perspective was that it takes away the responsibility from the individual user, and that it is too narrow (i.e., addiction can only be explained as a brain disease). However, as pointed by Heilig et al. (2021), emphasis on brain mechanisms does not undermine the role of environmental factors or the interplay of both brain and environmental factors on addiction and can be

perceived as complementary to other theories of addiction. Essentially, it has been suggested that the disease model broadens the understanding of addiction beyond mere behavioural or psychological understanding to highlighting the underlying neurobiological aspects of addictive behaviour. Heilig et al. (2021) also point out that discarding the brain disease model can contribute to the stigma experienced by substance users by virtue of re-categorizing substance use as a condition characterised by lack of will power and poor morality (see sec 1.2.1). It needs to be acknowledged that although there are several significant researchers in the field of neurobiology only a few have been mentioned below.

Leading researchers in the field of neurobiology, Koob and Le Moal, (1997) postulate that the continued use of drugs results in a pathological shift in the drug users' brain reward systems that results in a loss of control over drug intake. Koob (2018) theorised that the transition from occasional drug use to addiction involves a transition from positive reinforcement (rewarding effects of drugs) to negative reinforcement (termed as the 'dark side' of addiction), where drug taking is aimed to alleviate a negative emotional state that is created by drug abstinence (Koob, 2018). It is noteworthy that this aspect of the theory could be attributed to the functionality of addiction, where individuals take a substance to relieve a negative state. Another significant stage by Koob and LeMoal (1997) is the binge/intoxication stage. During the bingle/intoxication stage, environmental stimuli such as the place where drug was taken, persons with whom it was taken and the mental state of the person become associated with the drug, which then elicit conditioned responses of motivation to seek the drug and drug craving. It has been evidenced that the repeated effect of drug use leads to a reset in the brain's reward system and adaptation in the basal forebrain, resulting in increased reactivity to stress (Volkow et al.,2016), which has been strongly associated with detrimental impact on both health and drug addiction.

Stress has a dual relationship with addiction where it is cited as both a cause and a consequence of addiction. Neurobiological studies indicate that exposure to stress activates the hypothalamic-pituitary-adrenal (HPA) axis (Kreek et al., 2005), where activation or suppression of the HPA axis

influences addiction (Kreek et al., 1996; O'Malley et al., 2002). The study by Kreek et al. (2005) further elaborated that stress can enhance acquisition, increase resistance to extinction and induce reinstatement of self-administration of drugs. A review by Sinha (2008) highlighted the effect of chronic and acute drug use on stress responses, whilst also emphasising the role of stress in increasing vulnerability to drug use such as increasing initiation, escalation in use and relapse. This is discussed further in section 1.2.4.

One of the significant contributions of neurobiological theories of addiction has been to the designing of treatment interventions for substance addiction, such as the provision of opiate substitute treatment (OST) medication worldwide and insurance cover for SUD patients in the USA (Volkow et al.,2016). Despite its significance in enhancing understanding, researchers (such as Volkow et al.,2016) state that the medical model does not purport to be the only answer to understanding addiction, strongly encouraging further research on the influence of other factors (such as social and environmental factors) on substance misuse.

1.2.3 Behavioural model

The behavioural model based on the work of Skinner and Pavlov suggested that, like other behaviours, addictive behaviours could be learnt, unlearned and replaced with less destructive behaviours. The behavioural model provided new insights by suggesting that the consumption of a drug was associated with negative and positive feelings, and consequences similar to the principles of reinforcement.

In operant conditioning, both positive and negative reinforcement that is the reward experienced (such as feeling of intoxication) and desire to escape from discomfort (i.e., withdrawal) maintain addictive behaviour, where an individual will be drawn towards intoxication and away from withdrawal. In many ways this insight complemented the neurobiological model in enhancing the understanding of addictive behaviour from a different dimension. Interestingly, like the neurobiological models, the behavioural model also took into account the role of the environment in which the drug was taken (Heather and Greeley,

1990). This possibly led to greater examination of the role of society and environment by socio-cultural theories, which, like behavioural theories, emerged in the 1970s. Socio-cultural theories emphasised the historical, environmental and structural influences on addiction and the understanding of addiction (Room, 2003). An example is where studies identified that variations in drug using behaviour in individuals are influenced by differences in gender, race, mental health, socioeconomic class and exposure to stress (Assari et al., 2018) all of which have an influence on drug related outcomes.

1.2.4 Social and environmental perspective

Along with socio-cultural theorists, anthropologists also highlighted the role of the environment, suggesting that the environment in which drugs were consumed influenced the effect of substances (MacAndrew and Edgerton, 1969). One of the early experiments on environment and substance use was the ‘rat park’ experiment in the 1970s. Alexander et al. (1978) led a series of studies where rats were force-fed morphine over a period of time and placed in a ‘rat park’ or a large spacious cage that contained toys, food, opportunities to co-habit, rest and reproduce, ensuring a nurturing environment, whereas in the control group rats were placed in smaller, sparse cages. It was noted that, contradictory to expectations, for the majority of times rats who were placed in the ‘rat park’ chose the option of water over morphine-laced water even though the latter was sweetened to significantly appeal to the rat palate. This finding steered researchers to think about the role of environment and its possible relationship with addiction. However, some of the criticisms of the rat park experiment were methodological issues where measurement of water intake was not standardised between the control and experimental group, small sample size and the focus of the study being on difference between male and female rats on self-administration of drugs. Additionally, the research overlooked the interaction between environmental, social and biological factors, such as age, that can interact with the environment to influence the choice to take drugs or not take drugs (Khoo, 2020).

Other researchers Solinas et al. (2010) and Sikora et al. (2018) that have investigated the role of environment reiterate that environmental conditions

(both positive and negative) shape the behavioural and neurochemical effects of drugs. Their study mimicked positive life experiences in the laboratory environment, referring to it as environmental enrichment (EE), suggesting that EE can play a significant role in the development and maintenance of drug addiction. In preclinical studies with mice, EE was defined as larger cages with toys and access to social, cognitive and physical stimulation with the aim of providing a sense of well-being (Solinas et al., 2009). Sikora et al. (2018) reported that exposure to EE as compared to standard environment reduced heroin, amphetamine and nicotine seeking in rats. Solinas et al. (2010; 2009) proposed a unified theory that signified that EE is the functional opposite of stress, where the anti-stress effects of EE reduce the reinforcement experienced from drug use. Solinas et al. (2010) and Sikora et al. (2018) recommended that, in the light of their findings, the life conditions of drug users should be taken into account in treatment planning, as poor life conditions would negate the benefits of drug treatment.

Other researchers explain this relationship by suggesting that negative environmental factors such as poverty, poor relationships, and low-socioeconomic status contribute to dysregulation of stress responses, increasing the vulnerability to addiction (Sinha, 2001; Goeders, 2003). A recent report by the Home Office (Black, 2020) indicates that a disproportionately high number of young people from environments of deprivation, poverty, neglect and violence are drawn to substance misuse. A possible reason may be that the environment of deprivation and poverty has a greater likelihood to bring about increased levels of psychological distress (Ibabe et al., 2014). The experience of distress causes an individual to move towards anything that can alleviate the distress, which leads to the perspective of understanding the functionality of drug addiction in the lives of substance users.

1.2.5 Self-medication hypothesis and Bio-psychosocial model.

The self-medication hypothesis (Khantzian, 1985; 1997; 2021) elaborates on the functionality of drugs by stating that individuals consume drugs to relieve states of distress. The theory also stated that the selection of a specific drug

over another was owing to a degree of ‘psychopharmacologic specificity’, implying that the drug selected alleviated the specific painful state for that individual. Therefore, awareness of preferences in substance of use (i.e., alcohol or heroin) could be indicative of unaddressed underlying issues such as anxiety or depression. The self-medication hypothesis continues to be a popular means of explaining why psychiatric patients or individuals with mental health problems gravitate towards drug use. For instance, Khantzian (1997) states that individuals diagnosed with schizophrenia turn to alcohol, stimulants or other drugs as a means to relieve the negative symptoms associated with the psychiatric illness. Significant research on drug use among homeless drug users utilises the self-medication theory to explain the link between homeless living and increased drug use (Fountain et al., 2003), stating that the increase in drug use among homeless is owing to the need to alleviate the negative emotions such as stress or physical pain (Kemp et al., 2008b). However, one of the criticisms of Khantzian’s theory is that it provides a simple explanation for a complex problem such as addiction, overlooking that addiction is an interplay between psychological, social, physical and environmental factors. Importantly, although the theory is significantly important for therapists in the field of addiction (to create appropriate psychological interventions), it assumes that all drug users may have the same reason to use drugs i.e., to self-medicate.

Nevertheless, an alternative perspective was provided by the theory of Zinberg (1984) which posited that addiction was not just the influence of one factor but a complex interplay of a combination of factors such as the biology (drug), psychology (set) and the socio-spatial environment (setting) that influences the pattern of use and the effects experienced from the use of drugs. Zinberg’s (1984) bio-psychosocial model is more commonly known as the theory of ‘drug, set and setting’ within the clinical field. A number of practitioners have stated that the drug, set and setting model could be utilised beyond the assessment stage to planning of treatment interventions. The model helps identify the balance between drug using behaviour, psychological state and the environment, guiding the intensity of interventions required. Interestingly, Zinberg’s theory contradicted the medical model, arguing that an approach

focusing only on the ‘problematic’ drug would limit the chances of recovery unless equal attention was paid to the environment and the psychological well-being of the drug user. Importantly, Zinberg (1984) reiterated that the socio-spatial setting bore the greatest influence on an individual’s substance use. Recent research in addiction recovery (Best and Laudet, 2010; Neale et al., 2015) has reiterated the need to take a broader perspective, attributing factors such as improvements in social engagements, health and overall well-being as predictors for long-term, abstinent recovery.

It would seem that both Khantzian’s theory and Zinberg’s theory can be utilised for the advantage of addiction research. Whilst Khantzian’s theory attempts to explain the intrinsic factors that contribute towards substance use, Zinberg’s theory encourages the idea of focusing on both intrinsic and extrinsic factors.

Most theoretical perspectives, regardless of their original viewpoint, now recognise the vast array of risk factors for addiction and that these may interact at different stages in drug addiction from initial use to regular use and from compulsive use to relapse. The debate on the importance of individual models or combined theories continues in an attempt to elucidate and enhance our understanding of addiction. However, unlike the contradictions and disagreements within the theoretical perspectives on addiction, the impact of substance misuse on various factors is widely accepted. The next section will look at the impact of substance addiction.

1.3 Impact of substance addiction

It is known that substance misuse or addiction has a considerable impact beyond the individual user to the family, community and society as a whole. The importance of treatment for SUD is incomplete without an understanding of the impact of SUD.

1.3.1 Impact of addiction on society

As in other economically advanced countries, drug use has a considerable financial impact on the economy of the UK with increased costs in policing, incarceration and healthcare incurred in counteracting the negative

consequences of drug use. The total health, criminal justice and societal costs of drug use are estimated to be £19 billion a year, which is more than double the value of the drug market itself (Black, 2020). A more specific report on financial costs of substance use indicated that the average cost of an individual's crack and illicit opiate use was estimated at £58,000 a year (Black, 2021). The financial impact of problematic drug use has a cascading effect on the economy and growth of the country in more ways than one. Money that is spent on addressing addiction is often perceived as money that has been withdrawn from other areas of need or developments.

It is reported that worldwide there are about 11 million people in prison (Walmsley, 2016) with numbers continuing to rise, with SUD among prisoners indicative of poorer outcomes both during imprisonment and post release (Chang et al., 2015). In the UK, more than a third of prisoners (approximately 82,000 individuals) have been incarcerated for drug related crimes, although 1 in 4 prisoners were detained for offences associated with their addiction rather than involvement in supply of drugs. Many prisoners serve short sentences with poor planning about their reintegration into the community, thus increasing the likelihood of reoffending (Home Office, 2020). Additionally, it has been reiterated that among other factors, a lack of access to stable housing, financial resources and treatment contributes to an increase in the probability of relapse to drugs post release (Home Office, 2020).

In addition to incarceration, drug addiction has a significant impact on healthcare services, lost productivity, crime and social welfare (Mark et al., 2001). Research suggest that drug users often incur greater medical and health-related costs, owing to the drug using lifestyle such as injecting drugs and drinking excessive amounts of alcohol (Eyrich-Garg et al., 2008; Krupski et al., 2015; Topp et al., 2013). Other research indicates that vulnerable groups such as homeless substance misusers have a greater likelihood of accessing emergency services at greater costs as compared to the general population (Bernstein and D'Onofrio, 2013; Doran et al., 2018).

In addition to health costs, a significant effect of drug addiction is on life expectancy rates. According to the World Drug Report (2021), just under half

a million deaths and 30.9 million years of ‘healthy’ lives were lost because of the use of drugs. More than half of the deaths were caused by liver cancer, cirrhosis and other liver disease like Hepatitis C. The death rate among substance users is higher than expected within the general population, and reports indicated that drug related deaths in UK were the highest on record in 2018. The data also suggest that during 2020, drug poisoning and drug related deaths killed more people under the age of 50 than COVID-19 (Black, 2020). The increase was attributed to heroin-related deaths, which have doubled since 2012, along with a fivefold increase in crack cocaine-related deaths.

The Black Report (2020) also raised concerns about the record number of deaths among rough sleepers from drug poisoning and alcohol use, which were the highest since records began. The report highlighted the statistics on deaths in light of social inequalities where there were disproportionately high rates of death in deprived areas and in the north of England. Despite the concerns raised, there remains limited information about current substance use patterns among rough sleepers, which limits insight into the harm from substance use.

It is known that drug addiction extends its impact beyond the individual user to the family, with family members of drug users at increased risk of instability, economic hardship, emotional distress and exposure to violence. It is estimated that 2 million children are affected by parental substance misuse in the UK (Manning et al., 2009), while 478,000 children in UK are living with a parent with drug problems (Public Health England, 2021). A Report by the Home Office (Black, 2020) raised concerns about the high number of children and young people involved in drug supply, many of whom were from environments which make them highly susceptible to exploitation, such as children placed in care homes owing to carers’ problematic drug use. Zimić and Jukić, (2012) emphasised that children living with or being cared for by someone with substance addiction were at increased risk of developing a substance use disorder themselves. These children often experience unmet developmental needs and impaired attachment such as parents being unable to provide a secure base, offer stability, routine and other developmental needs. Research indicates that drug use has a negative impact on parental

competence and influences the social and emotional life of the child (Ward and Daley, 2014). In many cases, poor judgement by the parent due to the substance misuse may lead to children being exposed to increased risks of physical, sexual and emotional abuse (Daley et al., 2018).

On the other hand, parents or carers of individuals who have a SUD experience significant distress. Research suggests that along with the emotional and financial strain, poor quality of life, anger, frustration and loneliness (Shanahan et al., 2020) families of individuals in drug treatment continue to worry about relapse (Daley et al., 2018) of the family member to the addiction.

1.3.2 Impact of addiction on the Individual

Quality of life (QoL)

SUD is known to have a negative impact on several areas of life (Strada et al., 2017), and one of the commonly known impacts of problematic substance use is on the Quality of Life (QoL) of the drug user. In recent years, there has been an increased interest in the assessment of QoL of individuals with drug addiction.

QoL is subjective, and multidimensional and mainly pertains to the overall well-being of an individual (De Maeyer et al., 2010; Laudet et al., 2009). The World Health Organisation defines QoL as a subjective appraisal of a person's life, capturing their satisfaction with their current physical health, mental health, social relationships and environment (WHOQOL-BREF, 1998). QoL is also used synonymously with terms such as satisfaction with life, subjective well-being and health-related quality of life (HRQoL) (De Maeyer et al., 2010). However, HRQoL is different to the concept of overall QoL, where HRQoL is focused on the effect of a disease on individuals' daily functioning and health (Strada et al., 2017; De Maeyer et al., 2010). Whilst HRQoL assesses the presence or absence of disease, overall QoL encompasses the individual's satisfaction with life in general, their well-being, coping and interpersonal relationships. In addiction research, there are far more studies that assess HRQoL than QoL.

QoL consists of several sub-domains such as physical and psychological health, social circumstances and environmental circumstances (Kelly et al., 2018). QoL is associated with a more positive connotation (Laudet et al., 2009) where the National Drug Treatment and Monitoring System (NDTMS) defines QoL as the client's view on their 'ability to enjoy life, get on with family and partner' (Public Health England, 2018). In addiction, QoL provides valuable insight into the patient's views on treatment and their life in general (Strada et al., 2017) along with being recommended as a preferred patient-reported outcome measure (Muller, 2017; DeMaeyer et al., 2010). QoL has a significant role in the assessment of overall well-being and treatment efficacy for drug users (Strada et al., 2017), as elaborated by a study by Laudet et al. (2009) suggesting that QoL scores improved during remission for former polydrug users. Laudet et al. (2009) utilised the single item from WHOQOL (Bonomi et al., 2000) which asks, 'In general how satisfied are you with your life?' as a measure of overall wellbeing.

Research has found that the overall QoL in drug users is lower than in the general population, with factors such as psychological distress, taking medication for psychological problems and the inability to change one's living situation being strongly predictive of lower QoL scores for drug users in treatment (De Maeyer et al., 2010). A study by Kelly et al. (2018) categorised 9958 individuals attending substance use services into three distinct categories of low, moderate and high QoL. The results found that individuals who were in the low QoL category scored lowest across all domains of QoL such as general health, self-esteem, relationships and housing. The results also indicated that individuals who reported low QoL had more days of illicit drug use, more days of injecting and greater severity in substance use along with higher levels of psychological distress than individuals in the moderate and high QoL categories. The study suggested that QoL scores were associated with substance-related outcomes.

Limited studies on QoL in drug users indicate that current drug use is indicative of low QoL (De Maeyer et al., 2010; Laudet et al., 2009), where an increase in drug use was associated with decrease in QoL scores (Laudet et al., 2009; Laudet, 2011). An often-overlooked factor that has a detrimental effect on QoL

is housing circumstances where studies report that multiple episodes of homelessness along with physical and mental health problems are indicative of low QoL (Gentil et al., 2019; Gadermann et al., 2021). Despite both SUD and homelessness being indicative of low QoL scores, there are no studies that have systematically investigated QoL among homeless and non-homeless drug users.

Physical health

Previous research indicates that people with SUD had poorer physical and mental health than the general population (Griffin et al., 2015; Rosen et al., 2008), where some of the physical health conditions commonly associated with drug addiction are heart disease, hypertension, asthma, liver disease, cirrhosis, and blood-borne viruses (Weisner et al., 2001). Despite the difficulty in establishing a direct causal relationship between substance use and specific medical problems owing to confounding factors (such as genetic predisposition, lifestyle choices and polydrug use), there is previous research that associates certain health conditions with specific drugs.

As the most commonly used substance, alcohol is often associated with cardiovascular, liver, gastrointestinal, dental and neurological problems (Keaney et al., 2011). A review by Butler et al. (2017) indicated that the use of crack-cocaine was linked to infectious and parasitic diseases, bacterial infection, tuberculosis, disease of the circulatory system and mental and behavioural disorders such as anxiety, depression and psychosis. Opiate or heroin use is frequently associated with HIV and injecting-related infections and greater risk of trauma (Hser et al., 2019). Opiate use is also associated with significantly reduced life expectancy: the mortality rate in opioid addiction is 6 to 20 times greater than in the general population (Sugarman et al., 2020). Other medical conditions associated with injecting drugs are bone, joint, skin and soft tissue infections, and endocarditis (Cherubin et al., 1993; Contoreggi et al., 1998). It is noteworthy that the impact of SUD on physical health problems is not limited to those mentioned above.

Despite common associations between certain drugs and physical health, it is important to take into account that the relationship between substance use

and physical health is most likely bidirectional. Some studies report that substance use is a means of easing physical ailments such as chronic pain, sleep problems, extreme hyper- or hypothermia and drug withdrawal states (Fountain et al., 2003; Gray et al., 2020; Klee and Reid, 1998b). Other studies indicate that the use of substances aggravates physical health conditions (Doran et al., 2018), increasing morbidity and mortality rates (Home Office, 2020). Beyond harm caused to health, untreated physical health conditions can cause further complications such as loss of employment or loss of housing (Neale, 2001) making it extremely important to assess physical health in drug users. The assessment of physical health is routinely done in drug services as a means to increase likelihood of recovery and a means to improve health along with drug treatment outcomes.

Psychological health

Drug use is often strongly associated with psychological problems (Fountain et al., 2003; Kemp et al., 2006; Grant et al., 2004; Delgadillo et al., 2013). Recent reports indicate that depression and anxiety are the most commonly identified psychological disorders among patients within drug treatment services (Home Office, 2020), affecting 70% of drug users in treatment (Delgadillo et al., 2011). It has been suggested that 59% of all adults entering substance use treatment indicate a mental health need (Public Health England, 2019). However, where SUD is often described as a chronically relapsing condition, it is difficult to ascertain if individuals entering treatment had relapsed (i.e. been through treatment previously), and whether the present psychological problems might be attributable to their previous substance use history or whether the psychological problems preceded their substance use. Like physical health problems, it is very difficult to be certain about the direction of the relationship between psychological health and SUD.

As mentioned earlier, the self-medication hypothesis (Khantzian, 1985), suggests that individuals with mental health problems are more likely to be drawn to substance misuse as a means of coping (Kemp et al., 2006). Some studies suggested that drug users turn towards substances as a means of addressing negative feelings such as depression or anxiety (Kemp et al., 2006;

Klee and Reid, 1998a; 1998b). It has been found that a majority of SUD patients have co-occurring trauma or stressors such as adverse childhood experiences (ACE), such as emotional or sexual abuse, separation from parents, neglect or being exposed to violence. There is growing evidence which suggest that ACE are strongly associated with the chances of developing SUD (Bellis et al., 2019; Dube et al., 2003). The renowned ACE study by Dube et al. (2003) concluded that greater exposure to ACE was correlated with higher risk of developing SUD as compared to those with no exposure to ACE.

Previous studies have found that stressful experiences such as childhood adversity or chronic stress can affect and alter an individual's ability to respond to stress (Sinha, 2008; Solinas et al., 2021). Renowned physician Maté asserts that 'stress has everything to do with addiction', where early exposure to stressful life experiences sets a lower set point for the internal stress system, and such individuals become more stressed more easily, making them more reactive to stress throughout their life (Maté, 2012). Both animal and human studies have found a detrimental impact of stress on drug-seeking behaviour. In animal studies, exposure to stress increased acquisition of self-administration of drugs (Sinha, 2008), whereas in human studies there were positive correlations between perceived stress levels and the use of cocaine, alcohol and benzodiazepine for individuals in drug treatment (Moitra et al., 2013). It is possible that drug use is a means to cope with negative emotions such as trauma or stress, but the use of drugs can further add to the stress by virtue of the problems caused by substance misuse (such as financial problems, poor health or loss of housing).

Some studies suggest an association between certain psychological illnesses and illicit drugs such as depression and heroin use (Teesson et al., 2005; Ross et al., 2005); psychotic illness and cannabis use (Moore et al., 2007); mood and anxiety disorders with cocaine use (Conway et al., 2006) and the consumption of alcohol with major depression (Wang et al., 2020). It is noteworthy that most studies cite association rather than causality, whereby it is difficult to be certain if the use of certain drugs are contributory factors for the development of the illness or if individuals with certain psychological

problems are drawn to specific substances to self-medicate (Khantzian, 1985; Maté, 2012). Although most drug users are exposed to a multitude of stressors, such as trauma, neglect, poverty, deprivation and poor health, not all individuals exposed to stress, or trauma become addicted or substance misusers. In most situations it is the delicate interplay between risk factors (such as poverty, disadvantage, marginalisation or unemployment) and protective factors (such as social support, housing and employment) that ultimately determine the outcome for an individual (Neale, 2001, Fountain et al., 2006, Kemp et al., 2006).

Irrespective of whether psychological problems precede or follow substance use, co-morbidity presents an added challenge to addiction services and to treatment outcomes for service users. Research suggests that individuals who present with comorbid needs such as a higher level of depression are 20% less likely to achieve abstinence (Dodge et al., 2005), where the likelihood of relapse increased by three-fold for those who were depressed post-abstinence (Samet and Hasin, 2008). In order to mitigate the harms associated with psychological problems along with SUD, it is important to be aware of the factors that can enhance resilience and offer positive coping strategies such as effective treatment for SUD.

1.4 Treatment of addiction

Two decades ago, the Home Office suggested in Drug strategy in the UK (Home Office, 2002) that enabling drug users, especially heroin and crack-cocaine users, to access treatment is the best approach to improve their health and quality of life. Drug treatment continues to be a significant step towards recovery and possible reintegration into society. In order to understand why treatment is important it is essential to understand how drug treatment currently operates in the UK as compared to other developed countries.

In the USA, drug treatment is most commonly accessible via rehabilitation services and public mental health or substance abuse treatment centres. Although the vast majority require a payment to be made privately or through insurance, a few states offer affordable SUD treatment funded by the state for those with no insurance and no income (Huskamp, 2020). It has been

suggested that the treatment system in the USA often deters individuals who are marginalised (owing to poverty, homelessness or lack of access to social resources) leaving a gap between the individuals who need SUD treatment and those who receive it (Tambling et al., 2021). Other countries such as Australia have a similar system to the USA, where most SUD treatment is funded through private payments, medical insurance or through Australian government funding (Chalmers et al., 2015). In comparison to the USA and Australia, the UK is at an advantage as high quality treatment and recovery services for SUD are provided free as a part of the NHS, or through community drug services or charities that are allocated funds via local authorities.

1.4.1 Drug treatment in the UK

Drug treatment in the UK began as early as 1926 and has since evolved several times with the focus changing from reduction in crime and health risks, to holistic recovery and reintegration into society (HM Government, 2010). The outcomes from treatment are measured by the treatment outcome profile (TOP, Marsden et al., 2008) which continues to be the main measure to gather information on substance use, injecting risk behaviour, crime, health and social functioning.

In 2015, Public Health England was commissioned by the Department of Health to take leadership, introducing a new method known as payment by results (PBR) which was piloted in several parts of the country. The main purpose of PBR was to incentivise outcomes indicative of recovery. It has been suggested that outcomes are largely replicative of TOP along with reduction in relapse rates measured by the rates of re-presentation at drug services within a certain time frame (Eren et al., 2011). The detrimental effect of PBR was that drug services which were not able to demonstrate ‘successful completion’ (as measured by no representations within the service in 6 months) would face financial consequences. A strong criticism of the PBR method is that it would deter treatment services from taking on individuals who were more likely to relapse e.g., homeless drug users or drug users indicating low motivation to change. For nearly a decade, funding for substance use treatment in UK has fallen from 14% to 40% in some areas (Home Office,

2020), but there has been extra funding allocated following a report by Black (2020; 2021), to improve the existing drug and alcohol recovery system to a more ‘effective’ treatment system (Office for Health Improvement and Disparities, 2022; 2023). The additional funding however, brought increased pressure on substance misuse services to improve treatment outcomes and reduce rates of relapse. A report by PHE (2017) emphasised the need to review the impact of factors such as housing on drug treatment engagement and outcomes, where deprivation and housing moderates drug treatment outcomes. Reports reiterate that since the publication of the Drug Report (HM Government, 2010), there has been little information about the influence of housing circumstances on the lives of drug users (Public Health England, 2016; Home Office, 2022).

The Public Health England report (Black, 2020) suggested that nearly one fifth (19% or 24,369) of all adults entering treatment in the previous year disclosed that they had a housing problem. Interestingly, the proportion of need varied by the substance used, where 32% of those with starting treatment for opiate use stated they had a housing problem as compared to 10% who were starting treatment for alcohol use. This possibly highlights a greater need for housing support among illicit drug users but does not shed any light on the wider impact of housing problem on the lives of illicit drug users. Greater understanding about the role of housing in the lives of illicit drug users has consistently been overlooked by research (Neale, 2001; Fountain et al., 2002; Kemp et al., 2006).

National drug treatment monitoring system (NDTMS, Office for Health Improvement and Disparities, 2022) reported that in 2022, there were 187,707 adults in drug and alcohol treatment, where opiate users and alcohol users consisted of the largest proportion of individuals in treatment. However, it is concerning that the rates of successful completion for individuals exiting treatment have been markedly lower for opiate users (5.07%) as compared to non-opiate users (33.08%) and alcohol users (36.86%) (NDTMS, 2022). It is worth noting that there is a lack of consensus among services about what constitutes as ‘successful completion of treatment’ other than the clearly specified guideline of ‘no representation within drug services for the same

substance within 6 months'. Additionally, alcohol and cannabis users routinely attribute reduction in use as completion of treatment, but opiate users have to indicate complete abstinence to be in the category of successful completion. Nevertheless, there is a need to improve rates of recovery for opiate users along with other drug users.

Effective drug treatment has a significant and lasting effect by reducing the demand for drugs (Black, 2020) and providing the transition from an impoverished life towards improved health, abstinence, employment, and reintegration into the community. There is evidence to suggest that OST (such as methadone and buprenorphine) substantially decrease the risk of overdose, opioid-related mortality and the risk of catching infectious diseases such as HIV or Hepatitis C (Strang et al., 2020). A guide on better care for people with co-occurring disorders (PHE, 2017b) encouraged the use of evidenced based psychosocial interventions such as Motivational Interviewing (Miller & Rollnick, 1991), Motivational Enhancement therapy (Ball et al., 2007), trauma focused therapies and relapse prevention to address unmet psychological problems in individuals with SUD. The use of psychosocial interventions improves symptoms of anxiety and depression which contribute to improved overall well-being.

Additionally, although there is significant emphasis on the completion of substance use treatment, only limited consideration is given to the importance of other stages such as initiation, engagement and retention in treatment (Decker et al., 2014), thus, overlooking the fact that in order to get to successful completion a drug user must first begin with stages of initiation and engagement with treatment.

1.4.2 Current treatment of substance use in the UK

As mentioned earlier, most drug treatment in UK entails a combination of both pharmacological and psychosocial interventions. Currently, pharmacological interventions in the UK are commonly available for alcohol or opiate users only, where opiate users, being the largest proportion of illicit users in services, are frequently prescribed methadone or buprenorphine in line with NICE

guidelines (Dematteis et al., 2017). Both methadone and buprenorphine are oral medications, taken as a syrup or as sublingual tablets which allow the slow diffusion of the OST (Noble and Marie, 2018). Slow metabolism and elimination are important features of the OST which prevent individuals from experiencing withdrawal (Chiang and Hawks, 2003). Both methadone and buprenorphine bind with receptors in the brain, and if an individual on the OST consumes heroin, they will not experience the full effects of heroin. However, this interaction is dependent on providing the individual with an optimum dose suited to their specific needs in order to avoid experiencing withdrawal (Yassen et al., 2007), as the desire to avoid withdrawal motivates the need to seek heroin. The prescribing of OST is intended to steer the opiate user away from the risks of using unregulated opiates and prevent the discomfort of withdrawal and associated health problems. Substitute prescribing also allows an individual to reduce their dependency gradually by tapering the amount of medication prescribed in a controlled manner under the supervision of a health professional. In addition to OST, it is not unusual for SUD patients to be treated with psychiatric medication, with a view to reduce or manage psychiatric illness. Some studies suggest that psychiatric medication by virtue of improving psychological well-being would reduce the need for using drugs as a coping strategy (Khantzian, 1985), but the evidence for this remains inconclusive. Studies (Torrens et al., 2005) suggest that the amelioration of depressive symptoms does not always imply that there will be a reduction in substance use. In fact, patients with dual diagnosis are best suited to a concomitant approach to address both psychological disorders and SUD.

For the purpose of the current research programme, psychiatric medication implies medication such as antidepressants and anxiety medication prescribed for common mental health disorders within drug services (Delgadillo et al., 2013). The scope of this research programme was limited to anxiety and depression and excluded individuals on medication for severe and enduring mental illness such as personality disorders or schizophrenia.

It is recognised that substitute prescribing is not sufficient to tackle addiction. Large scale studies in the USA (Hser et al., 1998) and Australia (Teesson et al., 2006) have found that only 20% of individuals who are on methadone

maintenance treatment leave treatment drug free. Additionally, many patients have poor retention rates and relapse despite being on OST (Noble and Marie, 2018). Some addiction researchers suggest that being in treatment is not the same as being in recovery although the two words are often used interchangeably. This gap was acknowledged in the Drug strategy report (HM Government, 2010) which emphasised the significance of recovery alongside abstinence. Other researchers have reiterated that the mere absence of drug or alcohol use is not sufficient for recovery, as it overlooks the influence of other factors that are entwined with problematic substance use (ALMA, 2019; Neale et al., 2015; Laudet, 2011), suggesting successful drug treatment should be assessed by improvements in health, overall quality of life and housing stability.

1.4.3 Barriers to treatment

A recent report indicated that globally, only one in eight people with drug use disorders receive drug treatment annually (World Drug Report, 2021). Additionally, there appears to be a gap between the number of individuals who need services and the number of individuals who successfully complete drug treatment. For individuals who start treatment, reports from drug treatment services indicate high rates of early attrition with dropout rates as high as 80% within the first three months of treatment (Hoseini et al., 2017; Carroll et al., 2006). It has been suggested that many individuals with the need for SUD treatment are not able to access treatment owing to multiple barriers such as long waiting lists, lack of availability, stigma, lack of information about where or how to seek treatment (Madras et al., 2020; Substance Abuse and Mental Health Services Administration, 2013) or an absence of motivation to start treatment (Substance Abuse and Mental Health Services Administration, 2014). It was emphasised that among the structural and logistic barriers to treatment, housing was an important component that could deter or enhance treatment and recovery for SUD patients (Madras et al., 2020).

1.4.4 The role of initiation and engagement in drug treatment.

To understand the factors that impact upon the initial stages that lead to successful treatment, it is important to understand what constitutes as initiation and engagement in drug services. Initiation and engagement are process measures of change (National Quality Measures Clearinghouse, 2014). Although there are several definitions of what constitutes initiation and engagement in treatment, the definition articulated by the Washington circle (Garnick et al., 2014) has been the most utilised by researchers and organisations. According to Garnick et al., (2014):

Initiation: is defined as receiving a treatment service within 14 days after the beginning of a new outpatient or intensive outpatient episode.

Engagement: is defined as receiving two additional services within 30 days after the initiation service.

Other definitions of treatment engagement identify it as a stage between initiation and complete participation in treatment with attendance of 2-4 treatment sessions within a specific number of weeks (Siqueland et al., 2002). Another definition of initiation and engagement by Ober et al. (2018) defines treatment initiation as at least one substance use related visit within 14 days of identification and engagement as receiving an additional two substance use related visits within 30 days following the initiation.

Initiation and engagement are important because they can predict the level of treatment adherence and outcomes (Garnick et al., 2014). The Garnick et al. (2007) study on outpatients found significant association between drug users' initiation and engagement with their treatment outcome measures (which were set as arrests and incarcerations in the following year), where greater initiation and engagement was associated with lower arrests and incarcerations. Stronger treatment engagement implies a greater commitment to change, greater personal transformation and an increased likelihood of sustained change after discharge from treatment (Garnick et al., 2012).

More importantly, initiation and engagement can be identified earlier in the treatment journey so additional measures or interventions can be implemented in a timely manner rather than waiting until the program is over or the client has relapsed (Acevedo et al., 2016). Further, research suggests that in order to increase the likelihood of treatment completion, it is important that individuals are ready for treatment, motivated and engaged with the treatment programme (Ward et al., 2004). Ward et al. (2004) elaborates on this further by stating that readiness for treatment indicates that a person is motivated (i.e., has the will to and wants to), is able to respond appropriately (i.e., they can attend), find it relevant and meaningful (i.e., they can engage) and has the capacity or is able to enter the treatment programme. It has been highlighted that motivation is considered as pivotal in the process of engagement with treatment where low motivation for change has been identified as a significant barrier for successful engagement (Simpson and Joe, 2004).

There remains limited information on the role of housing on initiation and engagement in treatment (Neale, 2001), thus limiting the potential to study their engagement behaviour. The Wenzel et al. (2001) study on 326 homeless adults with substance use disorders (SUD) in Texas indicated that only 27.5% of homeless individuals in need of treatment accessed inpatient or residential treatment in the previous year and only 5.6% accessed outpatient SUD services.

Importantly, among the variety of factors that impact on initiation and engagement in addiction treatment, many factors cannot be altered such as age, race, and certain health conditions. A factor that can be altered (i.e. enhanced by use of psychosocial interventions) and has a significant effect on initiation, engagement and treatment outcomes is motivation to change (DiClemente, 2004). The next section will look at motivation to change and its significance in the lives of substance use disorders.

1.5 Motivation to change

1.5.1 Definition of motivation to change

Motivation is defined as the process which initiates, guides, and maintains goal-oriented behaviours, along with what causes one to act upon these behaviours (Opsal et al., 2019). Motivation is defined as a multidimensional construct consisting of both internal urges and desires, and external pressures and goals that influence the individual (Substance Abuse and Mental Health Services Administration, 2019). Krause (1996, p.9) suggested that the efficacy of any form of psychotherapy, counselling or case management depends on the motivational levels, where patients do not merely receive therapy but actively participate in the therapeutic treatment that influences the outcome of treatment. However, there exists a significant confusion about the conceptual definition of motivation owing to various criteria and terms regarding the concept (Drieschner, 2004). There is no commonly accepted definition of motivation in the scientific field (Shankar et al., 2019), where Keijsers et al. (1999, p.166) report 24-36 different criteria for identifying patient motivation.

Historically, motivation was considered a static trait, where individuals either possessed it or did not, but current views perceive it as a flexible trait that can be altered. Within addiction treatment, low motivation is frequently attributed to unfavourable treatment outcomes (Drieschner et al., 2004; Nir and Cutler, 1978). Miller (1985) steered away from this concept of motivation as a self-fulfilling prophesy where patients with low motivation were destined to fail and could not be encouraged with motivation enhancing interventions (e.g., Motivation Interviewing therapy). He described motivation as a more fluid trait that could be altered and influenced. This perception along with being more optimistic also enhances interest in factors that can enhance or alter motivation such as housing circumstances or health as discussed in section 1.6.6.

1.5.2 Role of self-efficacy in motivation

It has been indicated that whilst focusing on motivation it is essential to consider self-efficacy (SE), where self-efficacy has a significant role to play in motivation to change. Self-efficacy is defined as the perceived capability to perform a target behaviour (Bandura, 1977; 1986; Benight and Bandura, 2004), where motivation to pursue a behaviour (e.g. reduction in alcohol) requires a belief that one *can* pursue the behaviour. Bandura's (1977) original conceptualisation distinguished between outcome expectancy which is a belief that a behaviour will lead to a specific outcome and efficacy expectancy, which is the belief that one will be able to perform a specific behaviour which will lead to an expected outcome. SE is the primary construct in Bandura's (1986) social cognitive theory of behaviour change and is an important part of other theories of health behaviour such as the Transtheoretical Model of Motivation (Prochaska and DiClemente, 1983). Self-efficacy is considered similar to the perceived behavioural control in the Theory of Planned Behaviour (Ajzen, 1991). For the purpose of this research programme, the focus on self-efficacy will be as a means to enhance understanding of motivation to change.

Bandura (1997) distinguishes between self-regulatory efficacy and task self-efficacy. Self-regulatory efficacy is the confidence that individuals can or could maintain a behaviour in the context of potential barriers (Bandura, 2006, p.309), such as self-efficacy for not smoking in the face of temptation. Task self-efficacy is one's belief that one can or cannot pursue a specific behaviour at different levels (McAuley et al., 1991), e.g. abstain from cocaine for 2 days, 4 days or 7 days.

SE is important because it could assist in elaborating on *why* individuals are or are not motivated rather than simply stating if they are motivated or not. However, despite popularity there is some argument that owing to the way self-efficacy is operationalised (i.e., confidence about the capability to perform), it is a reflection rather than a determinant of motivation to perform health related behaviour (Cahill et al., 2006). The argument is that SE is a proxy for motivation where individuals state that they can do what they already have a drive to do, thus undermining the use of self-efficacy ratings as a

predictive factor in understanding and changing health behaviour (Williams &Rhodes, 2016). On the contrary, studies (Baumeister, 2016) state that both self-efficacy and motivation are required as separate entities to predict future behaviour. They state that the degree to which self-efficacy predicts the success of a behaviour is dependent upon if the individual was motivated to pursue the behaviour in the first place, citing examples of a case where an individual may have confidence in their capability to perform a future task (e.g., stopping drug use) but have little desire or motivation to do so. They emphasise the difference between 'I am confident I can, but I don't want to' and 'I really want to, but I am not confident I can'. In light of the above, the understanding of both self-efficacy and motivation together can enhance the understanding of health behaviour.

1.5.3 Theoretical perspectives on motivation

Within the field of addiction, the most influential perspectives on motivation have been the Social Learning Theory (Bandura, 1977), the Theory of Planned Behaviour (TBP, Ajzen, 1985; 1991) and the Transtheoretical Model of Motivation (TTM, Prochaska and DiClemente, 1982).

The Social Learning Theory (Bandura, 1977) integrates parts of behavioural and cognitive learning, suggesting that a combination of environmental and psychological factors influence behaviour. The theory states that people desire positive results while trying to avoid negative consequences. The theory also suggests that the likelihood of repeatedly engaging in a behaviour is influenced by the belief that one is going to succeed in executing the behaviour (self-efficacy). Another theory that has been extensively applied to substance use problems is the Theory of Planned Behaviour (TBP, Ajzen, 1985; 1991), a popular social-cognitive model of human behaviour. The TBP is a general model of behaviour that suggests that the probability of engaging in a behaviour is determined by the intention to engage in that specific behaviour. The intention is determined by attitude (i.e., personal evaluation of the advantages and disadvantages of pursuing a behaviour), subjective norm (i.e., the social pressures to engage or avoid a certain behaviour) and perceived behavioural control (i.e., individual perception of how difficult or easy a

behaviour might be). Perceived behavioural control is similar to the concept of self-efficacy as described in Bandura's theory on self-efficacy (1982). This next section will review and evaluate the TTM Model as a means of understanding motivation to change.

1.5.4 The Transtheoretical Model of Motivation (TTM, Prochaska and DiClemente, 1982)

The Transtheoretical Model of Motivation (Prochaska and DiClemente, 1982) is considered a popular (DiClemente, 1999) and dominant (Davidson, 1992; Lua et al., 2011; Prochaska & Norcross, 2001) perspective to understand the process of change in addictive behaviour. It is the most commonly utilised model in drug services in the North of England, offering an integrative framework for describing the processes of change that underlie attempts to modify problem behaviour. The TTM model identifies different processes of change that describe the ways in which people change their behaviour. The model incorporates different theoretical constructs such as the stages of change, process of change, the levels of change, decisional balance and self-efficacy. For the purpose of this research programme, we will primarily focus on the stages of change, as they represent the motivational aspects of the change process (DiClemente, 1999).

The TTM states that change takes place when people transition through a series of stages as elaborated in the next section. Although originally applied to smoking, the TTM model has since been applied to a broad range of behaviours such as substance use, gambling, medication compliance, safer sex and HIV/AIDS prevention (Guillot et al., 2004; Hall & Rossi, 2008; Norman et al., 1998; Sutton, 2001). The model utilises a focused view of motivation, defined as the 'readiness to change'. Readiness to change is a pragmatic and open approach, indicative of a willingness to engage or adopt a particular behaviour (DiClemente, 2004). Miller and Rollnick (2004) state that it can be conceptualised as the identification of the problem behaviour such as smoking as a problem and confidence in one's ability to change it. Readiness to change is often used interchangeably with readiness for treatment where both are strongly related and influenced by a combination of internal and external factors. Although, some scholars have been rigid about separating the two

concepts (Littell and Girvin, 2002), it is noteworthy that readiness for treatment would essentially predict some presence of readiness for change. For example, in typical non-coerced referrals it would be expected that one would not be willing to access treatment for substance misuse if they did not have a desire to make changes to their drug use.

1.5.5 Stages of Change

The stages of change, also known as the cycle of change, is one of the most commonly used tools in addiction services in the UK. DiClemente referred to it as the lynchpin of the TTM model. The stages of change divides the process of intentional behaviour change into distinct stages, each with its own specific tasks and motivational considerations (DiClemente, 1999). It is a fundamental aspect within the TTM and has been widely utilised by clinicians and researchers to conceptualise and track the change process. The original model proposed four stages of change, but the current version presents five stages of change (Prochaska and DiClemente, 1982, 1992). These are:

Precontemplation: The individual has not made any intention towards change neither do they identify the problem behaviour as a problem to themselves or others. People may not present at services of their own volition at this stage.

Contemplation: The individual indicates an awareness about the problem behaviour and considers taking steps towards changing the behaviour. They are aware of the pros and cons of making or not making a change and weigh up the different solutions of the problem. Individuals will be more willing to receive information about their behaviour change and to express their intentions to professionals.

Preparation: This is the stage when an individual has made a commitment towards making the change. Most individuals would have a plan and will take small steps towards reaching their goal (e.g., reduction in the frequency of drug use or number of cigarettes smoked per day).

Action stage: Individuals in this stage make observable behaviour changes in the direction of changing the problem behaviour (e.g., attending appointment at SUD services). Compared to other stages, this stage involves the most overt

behavioural changes and involves a commitment of time and energy towards the desired behaviour.

Maintenance stage: This is the stage when an individual maintains the behavioural modifications that have led to change (e.g., continue to remain abstinent from cocaine). They consolidate the gains from the behaviour change and actively prevent relapse to the problem behaviour.

The movement between the stages is not linear and individuals can move back and forth several times through the stages of change before they reach the maintenance stage. Prochaska and DiClemente, (1992) state that there can be an accurate assessment of the stage of change and the success of treatment would partially depend on the stage of change achieved, with prediction of more successful treatment for those in the later stages. The likelihood of relapse is acknowledged such that it may occur during or post maintenance, but it is not perceived as failure, rather as a part of the journey. The stages of change are significant as they segment the process of change, such that successful engagement in tasks of each stage support engagement in tasks of the next stage (DiClemente, 2003).

Despite appealing to many researchers and clinicians, the TTM presents with some problems such as identifying the exact stage of change. Some scholars indicate that the movement between the stages is inconsistent (Drieschner et al., 2004) with others arguing that the change within the model does not take place in genuine stages (McMurran, 2009). Littell and Girvin (2002) state that there was little evidence to show that people progress through the entire stage sequence even though Prochaska and DiClemente (1992) state that recovery from addiction only occurs after each stage had been passed through. Prochaska and DiClemente (2005) accounted for such changes stating that stage transitions could be missed through being rapid, and measures that were taken months apart would miss picking up these transitions. Unless one was constantly observing and measuring changes, it was highly unlikely that transition would be detected. Additional criticism was directed at some of the questions of the staging algorithms and the lack of consistency among

measures where individuals categorised at one stage in one measure would be at a different stage in another measure.

Despite various criticisms, the TTM model is a prominent model of motivation in the field of addiction among both clinicians and researchers (Sutton, 2001). It has wide applicability and remains a popular model of change in health-related and addictive behaviours (McClellan et al., 2020; Povey et al., 1999). The stages of change provide a useful framework for examining change or progress in a diverse population whilst avoiding over-simplifying the categorisation of drug users as ‘motivated’ or ‘unmotivated’. The TTM steered practitioners away from using labels such as ‘resistant’ or untreatable towards enhancing understanding on increasing their motivation (Prochaska and DiClemente, 2005, p.149). The TTM model is a useful reminder for clinicians to vary the interventions according to the stage identification, e.g., individuals in the earlier stages would require different motivational interventions from those who were further on in the stages of change.

1.5.6 Factors that influence motivation to change

Motivation to make change is multifaceted. Several factors influence motivation by increasing or decreasing the levels of motivation. This section will discuss the influence of referrals, problem recognition and drug related factors, health factors, demographic factors and housing factors on motivation to change in substance users. This section also acknowledges that among all the factors housing remains the most under-researched.

Voluntary vs coerced referral

One of the most controversial conversations in addiction research is on voluntary versus coerced participation, where most treatment services have a significant proportion of patients mandated to participate in substance use treatment (e.g., referred by social services, courts, criminal justice systems). This implies that these individuals are not attending services by their own volition (or owing to an internal locus of causality) but rather are motivated by external pressures, rewards or fear of consequences. Williams et al. (1998) state that an important determinant of involvement in treatment is whether individuals feel autonomous or controlled. Farabee et al. (1993) found that the

drug users in the USA who were mandated by court demonstrated lower assessment of drug problems, desire for help and readiness for treatment as compared to individuals who had volunteered to attend.

Opsal et al. (2019), in a prospective study in Norway, compared voluntarily admitted patients (n=65) and involuntarily admitted patients (n=137) in addiction treatment for different substances such as alcohol, heroin, other opiates, benzodiazepines and other sedatives, amphetamines, cannabis, cocaine, inhalants and hallucinogens. The study found that at entry, voluntarily admitted patients had greater motivation to change than those who were involuntarily admitted. The study noted that both sample groups were detoxed and tested for negative drug results prior to inclusion in the study. Interestingly, Opsal et al. (2019) stated that the motivation levels changed at the follow-up after discharge (i.e., improved after a period of attendance) for some of the involuntarily admitted patients, where 75% acknowledged that they needed the help and only 25% expressed negative opinions about the involuntary admission. This suggest that although patients initially struggled to perceive life without the drugs, being in the treatment programme shifted their perspective whilst noticing improvements in associated variables such as health, finances or relationships. The study by Opsal et al. (2019) indicated that motivation is not static and can be influenced and enhanced over time.

Problem recognition and behaviour change

Problem recognition is the ability to identify and come to terms with the fact that a problem exists with a behaviour (e.g., smoking is increasing my chances of cancer or overeating is causing health problems). The recognition of a ‘problem behaviour’ or a behaviour that needs to be changed (e.g., smoking, injecting drugs, having unprotected sex) is the first step in the process of change. Individuals are influenced by various factors in the recognition of a problem such as experiencing more problems owing to the behaviour. A qualitative study by Dillon et al. (2020) in USA on 30 drug users enrolled in a residential drug rehabilitation unit indicated that the motivation for engagement with the programme was based on their perception of the severity of their substance use and their self-efficacy that the treatment would prevent a future

relapse. The study found that participants' perception of greater severity in substance use or greater self-efficacy about the benefits of treatment motivated them to engage and complete the treatment programme. Similar findings were suggested by Upshur et al. (2014) in a study on 154 women which found that higher lifetime consequences of substance use for both drug and alcohol was significantly associated with higher readiness for change.

Another study by Peterson et al. (2016) on the effect of type of drug use and motivation to change compared heroin and opiate users (n=108) and non-heroin and opiate users (n=150) mainly recruited from inpatient facilities. Their study found that heroin and opiate users had higher motivation to change as compared to non-heroin and opiate users. Interestingly, the study suggests that heroin users were more likely to be involved in crime, to be older and to have greater health consequences which might have influenced the desire to address the problem behaviour.

Health factors

Another factor that influences the motivation to change in drug users is their health status or their perception of their health status. The Pollini et al. (2006) study on 353 active substance users admitted to hospital found that believing that one would get sick again if they continued to use substances, being 'tired of using' and physical health concerns were factors that were independently associated with increases on the stage of change (moving from precontemplation to contemplation). The study also suggested that physical health concerns was cited as the most important reason for wanting substance use treatment. Other factors such as feeling depressed or suicidal had an impact on motivation levels, where drug users keen to access treatment had a significantly higher proportion of suicide attempts as compared to drug users who did not want to access drug treatment (Opsal et al., 2019). Studies indicate that higher levels or greater severity of depression were indicative of higher motivation to change (Zule et al., 2003). It is highly likely that experiencing a desire to alleviate the depressive symptoms would motivate individuals to access SUD treatment, with increased probability of being supported for their psychological needs alongside SUD. Contrary findings were suggested by Nyamathi et al. (2018) on homeless, female ex-offenders

which suggested that depressive symptomology was negatively correlated with treatment readiness. The authors elaborated on their findings by stating that depressed individuals may avoid fearful or challenging situations such as ending drug use (where drug use may be a coping strategy for the mental health problems) thus explaining low readiness. It is also possible that the conflicting results from the studies mentioned may be attributed to gender differences in the samples studies as women are known to be less likely to want to access SUD treatment (Copeland, 1997).

Demographic factors

Factors such as employment, social stability and reduction in criminality increase periods of abstinence in drug treatment (Sheehan et al., 1993) whereas the absence of these factors reduces motivation leading to treatment dropout (Simpson & Joe, 1993; Callahan et al., 2015). A study by Peterson and Gustafsson (2017) on drug users found that being white significantly increased the likelihood (3.22 times) of being a primary heroin/opiate user, where both heroin and opiate users showed significantly higher motivation to change as compared to other drug users.

There is research to suggest that age plays a significant role in motivation to change, where younger drug users reported lower motivation to change as compared to older drug users (Breda and Heflinger, 2004; Cady et al., 1996). Breda and Heflinger (2004) attribute this to the increased likelihood of negative consequences (such as health problems) that accompany a longer substance using history.

Studies on motivation to change have also found that women and men may differ in factors that motivate them to change (Sherman et al., 2016). The study on cannabis dependent individuals found that women were driven by external factors (e.g., cannabis related problems) and men were driven by internal factors (e.g., self-efficacy). In women, cannabis related problems were associated with taking steps whereas in men greater self-efficacy and recent drug use were associated with taking steps.

Housing circumstances

Despite housing being a commonly cited problem among drug users, there is limited research that has looked at the influence of different housing circumstances on the level of motivation. A study by Upshur et al. (2014) in the USA compared women who were homeless (n=69) and continuously housed (n=85). They found that contrary to expectations, there was no significant difference in motivation to change drug or alcohol use in homeless or continuously housed women. Interestingly, within the homeless group, they found that women who experienced 15 or more days of homelessness indicated a higher importance to changing drug use as compared to those who reported fewer than 15 days of homelessness. The study highlights that experiencing greater number of days of homelessness influenced the prioritisation of drug treatment in females. It would be interesting to investigate if the study would yield different or similar results for males as the challenges faced by homeless females would be different to those faced by homeless males.

Another study in the USA by Velasques et al. (2000) examined motivation to change drugs and alcohol use among 100 homeless individuals. The results indicated that homeless individuals were at different stages to give up drinking than they were to give up drugs, indicating variance in motivational levels based on the substance of use. A study by Collins & Slesnick (2011) on homeless youth in Ohio aged between ages 14 and 20 years found similar findings, where the factors that influenced motivation to change differed on the basis of alcohol or illicit drug use (which included substances such as marijuana, sedatives, opiates, inhalants, hallucinogens, hypnotics, steroids, amphetamines, and cocaine). Their study found that motivation to change alcohol use was associated with more frequent use of the substance, older age and a history of childhood sexual abuse, whereas motivation to change illicit drug use was associated with experiencing more negative consequences of the substance use. More importantly, the Collins & Slesnick (2011) study emphasises the importance of separating motivation to change alcohol and drug use, highlighting that there may be a need for different intervention strategies based on different motivating influences depending on the

substance of use. In light of the above findings, there is evidence to suggest that motivation to change alcohol use depends on different factors than the motivation to change illicit drug use, thus emphasising a need to further understanding on variance in the motivation or readiness to change in drug users.

In summary, there is limited evidence about the influence of housing status on motivation to change, with no understanding about the motivation levels in unstably housed drug users. Previous studies on homeless drug users has mostly been within US populations, with homeless individuals who were enrolled in programmes or accessed services, thus excluding 'hidden' homeless individuals. It has been suggested that the population of homeless who do not engage in research are often the population with the greatest need for access to treatment, indicating a need to further explore motivation in drug users in varying housing conditions.

1.6 Housing and substance use

Most research on drug use and housing circumstances focuses exclusively on homelessness. SUD is considered both a cause of homelessness (Alma Economics UK, 2019; Fountain et al., 2003; Johnson et al., 1997; Neale, 2001) and a consequence of homelessness (Fountain et al., 2003; Topp et al., 2013; Johnson et al., 1997). Homelessness among drug users raises the likelihood of poor physical and mental health (Kemp et al., 2006) and risky behaviour with more severe consequences (Topp et al., 2013; Home Office, 2020). The relationship between substance use disorders and homelessness is complex and entwined where factors that enhance the risk of developing SUD are the very factors that enhance the risk of homelessness such as adverse childhood experiences, mental health problems, poor social support, living in poverty and disadvantaged environments (Bramley et al., 2020; Klee and Reid, 1998a).

Homelessness and drug addiction present the most challenging problems experienced by the economically developed nations. Despite this, the most recent Drug Strategy released in December 2021 (Public Health England, 2021) highlighted the dearth of information on the relationship between housing and SUD. The report stressed the need for further research on

variables that would enhance treatment and recovery in SUD patients, where previous reports have already highlighted the lack of understanding of the relationship between housing circumstances and SUD (Public Health England, 2016) within the UK population.

1.6.1 The relationship between housing and substance use

It is known that substance use is disproportionately high among the homeless population. Additionally, many homeless individuals experience 'tri-morbidity', which is characterised by poor mental and physical health along with problematic substance use (Cornes et al., 2018). Substance use among homeless individuals is consistently above average (Fazel et al., 2008; O'Toole et al., 2004) with a disproportionate number of homeless being drug users (Kemp et al., 2006). A meta-analysis of international studies (Fazel et al., 2008) found that rates of alcohol (8.1-58.5%) and drug (4.5-54.2%) dependence among homeless individuals were substantially higher than overall global prevalence rates.

A commonly debated question among addiction researchers is whether drug users gravitate towards poor housing or if impoverished housing conditions cause drug users to continue seeking or using substances. The relationship between poor housing conditions such as homelessness and substance use disorder is often explained by the social selection or social adaptation model. The 'social selection' model proposes that homelessness is representative of a gradual endpoint of the economic and social resources of an individual that is caused by substance misuse (Johnson et al., 1997). By virtue of this model, individuals who misuse substances eventually exhaust the available resources, losing their job, family and friends, which significantly contributes to their homelessness. In contrast to this, the 'social adaptation' model (Strauss, 1946) proposes that substance misuse is a consequence of homelessness, where homeless individuals gravitate towards substances owing to their ease of availability, to cope with stressors associated with being homeless or as a means of forming social connections with others in a similar plight (Johnson et al., 1997; 2008). Many researchers state that both social selection and social adaption models are best utilised as complementary

explanations rather than mutually exclusive explanations (Topp et al., 2013; Johnson et al., 1997).

1.6.2 Definition of homelessness

Homelessness in the UK has been rising since 2008, with an estimated 271,000 individuals in England classed as homeless (Shelter, 2021; 2023). Although there is some research on the extent of substance use among the homeless, there is limited understanding of the extent of homelessness among substance users. One of the reasons for this could be attributed to the lack of a universally accepted definition, agreed by all, of homelessness. In Europe, The European Federation of national organisations working with the homeless (FEANTSA) and the European Observatory on homelessness have developed a European typology of homelessness and housing exclusion (ETHOS light, 2007). The ETHOS typology (Edgar, 2012) divides homelessness and housing exclusion into rooflessness, houselessness, insecure housing and inadequate housing.

Some of the definitions used by researchers in economically developed countries to conceptualise homelessness are provided below:

Hwang, (2002) in Canada stated that homelessness was defined as living in a shelter, on the street or any other place not intended for habitation by humans or living in temporary arrangements with family and friends.

Topp et al. (2013) in Australia conceptualised homelessness as more than the mere absence of shelter to include accommodation that fell below community standards of housing safety and access to facilities.

Klee and Reid (1998b) in the UK defined homelessness as without stable accommodation or permanent accommodation. Their definition encompassed most homeless arrangements such as rough sleeping, night shelters, friend's homes, hostels and B&Bs.

Alma Economics (2019) stated homelessness in the UK is categorised into statutory homelessness (previously referred to as homeless households in priority need, who have applied or are eligible to apply to Local Authorities for temporary accommodation), single homeless (hidden homeless individuals

without children or dependents), and rough sleeping (bedded down on the street with no shelter).

In the UK, Public Health England (2019) defines homelessness as a household that has no home in the UK or anywhere else in the world that is reasonable and available to occupy. A report by Crisis (2019) indicates that homelessness includes a wide range of housing conditions such as:

a) Rough sleeping – individuals who are sleeping on the streets, train and bus stations, under bridges and in parks or cemeteries. They are categorised as the most ‘visible’ in the homeless category.
b) Temporary accommodation - individuals who are living in night/winter shelters, hostels, B&Bs or women’s refuges where there are variable rules on the duration of stay.
c) Hidden homeless - individuals who are living with friends and families (‘sofa surfing’), and those in unsuitable housing such as squats or ‘beds in sheds’. This is the category that is often ‘hidden’ and ‘unseen’, where individuals remain unaccounted for especially in research.
d) Statutory homeless - households classed at ‘priority need’ by local authorities, who seek assistance from the local authority due to being at risk of current or imminent homelessness.

It is noteworthy that researchers investigating homelessness are bound by the definitions utilised to conceptualise homelessness, for example ‘precariously housed’ could be categorised as housed or homeless depending on the country of research and definitions applied. The definition of homeless by Crisis (2019) recognises the importance of including individuals ‘at risk’ of homelessness along with rough sleeping, hidden homeless and statutory homelessness. But the document does not provide any more information about what or who would constitute as the ‘at risk of homelessness’ category. Research (Public Health England, 2016) states that ‘homelessness is a shorthand for a range of housing circumstances’ and ‘across literature there is no single definition of homelessness’.

1.6.3 Other housing circumstances

Most homeless literature suggests that in economically advantaged countries such as Europe, Canada and the United States, most individuals who become homeless transition through secure housing to homelessness via the route of unstable or insecure housing conditions (Alma Economics UK, 2019). The rapid review commissioned by the UK government (Alma Economics UK, 2019) indicated that some of the factors leading to homelessness were substance misuse, mental health problems and being housed in poor conditions or unaffordable housing. A review by Magwood et al. (2020) clarified that unstably or vulnerably housed individuals would be best classed as ‘at risk of homelessness’. They further specified that at risk of homeless referred to people who were not currently homeless, but whose current economic and housing conditions were precarious, and did not meet public health and safety standards.

A report by Public Health England (2016) suggested that studies were in consensus that a healthy home was important to the recovery journey in SUD treatment but that the role of an unhealthy home or living in conditions not conducive to positive change (such as cold, damp or unsafe) had not been investigated. This reiterates that housing for SUD patients is not a dichotomous issue where drug users are either homeless or stably housed. They may in fact be in insecure, problematic housing conditions. It is therefore assumed that despite being ‘housed’ the impact or experience of insecure, problematic housing cannot be equated with stable, secure housing. Of more concern is the notion that drug users who are residing in precarious housing conditions (such as rat-infested, mouldy or damp conditions) are often overlooked by both researchers and support services, which means that there remains limited understanding of the challenges experienced by drug users in unstable housing. Limited understanding would in turn result in poorer service delivery and targeted treatment provision.

There is research to suggest that the ‘in-between stage’ of being unstably housed or housed with problems along with substance use is a significant risk factor for deterioration into ‘complete or literal homelessness’ (Magwood et al.,

2020; Eyrich-Garg et al., 2008). However, it is not clear if this deterioration is owing to increase in drug using behaviour, decline in well-being or lack of motivation to engage with treatment. The understanding of the challenges experienced by unstably housed SUD patients would allow services to intervene prior to complete deterioration in housing circumstances. The next section will review the limited literature that has compared drug users in different housing circumstances.

1.7 Comparison between substance users in different housing circumstances

Although there are limited studies that have investigated differences between homeless vs housed drug users, there remains a lack of consensus about the definition of homelessness. The section below provides a review of the most relevant studies that have compared homeless vs housed drug users.

A study by Topp et al. (2013) compared the characteristics of drug users in stable and unstable housing circumstances in Australia. Stably housed were categorised as individuals who were owners, private renters, residing in social housing, or in residential drug or alcohol detox or treatment facilities. Unstably housed were conceptualised in alignment with Australian government definitions of primary, secondary and tertiary homelessness where *Primary* were rough sleepers, residing in cars, abandoned buildings or impoverished dwellings. *Secondary* homeless were defined as staying with friends, relatives, or homeless services with *Tertiary* being both short- and long-term arrangements in hostels, caravan parks or boarding housing with no secure lease. The results suggest that unstably housed drug users were more likely to be higher risk takers: injecting drugs more frequently, sharing injecting paraphernalia, injecting publicly, and being injected by other people as compared to stably housed drug users. Interestingly their study found that two-thirds of unstably housed had been primary homeless at some point in time, and those who were primary homeless had often deteriorated from secondary and tertiary homelessness. The study highlighted that drug users in ‘other’ categories of homelessness were ‘at risk’ of becoming completely homeless. The study did not investigate differences in amount of drugs consumed, or

severity of drug dependence, but rather focused on demographic characteristics and risk behaviour.

A study by Orwin et al. (2005) in Chicago compared housed (i.e., stably housed) and not housed (i.e., marginally homeless, literally homeless and institutionalised) drug users to determine characteristics and factors that predicted residential stability in individuals in different housing circumstances. For the study, literally homeless were defined as on the street or outdoor homeless, whereas marginal homeless were defined as residing in a hotel, motel, someone else's apartment or transitional housing. The longitudinal study indicated that participants who reported greater severity of drug use and crack use were more likely to be marginally and literally homeless, where the continued use of crack predicted significant deterioration of housing circumstances into homelessness. Interestingly, the study indicated that there were no differences between the housed and non-housed drug users on psychiatric severity. The study was restricted to individuals accessing drug treatment and resident in Chicago and might not be directly generalizable to a UK population of drug users. Additionally, the study only assessed differences on drug use on the basis of frequency of use rather than both frequency and quantity of drug use.

A study by Krupski et al. (2015) in the USA on non-treatment seeking drug users compared data derived from primary care clinics on homeless and non-homeless drug users. Among the 866 records on drug users, only 30% were homeless drug users where homeless were defined as individuals who had spent 1 or more days out of 90 days on the streets, abandoned buildings, cars or in shelters. Their results indicated that homeless drug users reported higher drug severity and greater drug and alcohol combined scores. They had lower likelihood of marijuana use and greater likelihood of using stimulants, alcohol and nicotine as compared to housed counterparts. The study also found that homeless had a greater chance of having accessed emergency departments and previous drug treatment. Contradictory to the findings of Orwin et al. (2005), the study found homeless drug users reported more serious mental health problems in the previous month as compared to housed drug users. Despite indicating lower chronic illness and no difference on psychiatric

diagnosis on medical records as compared to housed drug users, the study suggested that homeless drug users had accessed emergency departments (ED) more frequently and with greater costs, where frequent use of ED by homeless was often associated with psychiatric and medical conditions (Tsai et al., 2020). However, the study by Krupski et al. (2015) was only based on non-treatment seeking drug users in USA, where they did not investigate 'unstably housed' as a separate category.

A study by Doran et al. (2018) investigated substance misuse among a sample of 2309 patients accessing ED in the USA, comparing substance use between homeless and housed patients. Their study found that homeless drug users had higher rates of drug and alcohol use and higher rates of drug use in the previous year. In terms of substances the homeless patients reported greater difficulty with cocaine, crack and heroin in the previous year. Their study found a strong association between homelessness and opioid overdose, drug overdose is a leading cause for untimely death among the homeless (Baggett et al., 2013). Although the study raises concerns about the risk of overdose among homeless drug users it utilised data collected from a large public hospital ED, with limited insight into differences in physical or psychological health on the basis of housing circumstances.

The study by Eyrich-Garg et al. (2008) could be considered by far the most similar to this research thesis. The study utilised a computer assisted interview to gather data on 5629 treatment seekers based across several cities in the USA to assess if income was related to expenditure on drugs and if the literally homeless had worse outcomes on psychosocial problems as compared to the housed groups. The sample was divided into four housing categories based on their residence and annual income; literally homeless (n=654), marginally housed (n=1138), housed poor (n= 3119) and housed not poor (n=718). Literally homeless were defined as those who spent at least 1 night of sleeping on the streets, or in abandoned cars, buildings, parks or bus stations in the last 30 days. Marginally housed were defined as those who spent at least 1 night of 'doubling up' or living with others in the last 30 days. Housed poor and not poor were categorised by annual income. The results indicated that the literally homeless and marginally housed were similar in their drug use as

indicated by similar frequency of cocaine and heroin use. However, the differences emerged in spending patterns where literally homeless were spending more money on drugs as compared to the marginally housed drug users. The study did not elaborate on the reasons for the discrepancy, but it is possibly explained by differences in quantity of drugs, which the study did not investigate. Differences in quantity or amount of drugs can be indicative of variation in treatment where individuals who use 0.2 grams of heroin twice a week could vary in treatment needs to another who was using 1 gram of heroin twice a week.

Contrary to findings by Orwin et al. (2005), where homeless drug users indicated no difference in mental health problems from other housing groups, the study by Eyrich-Garg et al.(2008) suggested that literally homeless had greater severity in mental health problems, as indicated by previous inpatient psychiatric hospitalisation and composite scores on the addiction severity index. However, not all homeless drug users might have a mental health need that required hospitalisation, and the study by Eyrich-Garg et al. (2008) did not investigate common mental health problems such as anxiety, depression or stress levels in the sample studied. Despite having a large dataset, the data collected did not include drug users who were not accessing treatment services, such as individuals who might be transient, rough sleepers or ‘hidden homeless’. There is evidence to suggest that those occupying the worst housing circumstances are less likely to access treatment services, however the perspective of those out of treatment can bring significant insight into the impact of housing circumstances on their substance use trajectory. Additionally, like most of the studies mentioned previously, the study by Eyrich-Garg et al. (2008) was based on an American population where the social structure, characteristics, needs and challenges experienced by individuals are different to the UK population.

1.8 Summary and overview of thesis

The above literature indicates that drug addiction remains a global problem and the UK continues to face significant challenges at multiple levels such as economic, social, familial and individual levels. Although there are a plethora of perspectives to explain addiction, it is best understood as a multidimensional construct where different perspectives complement each other by providing alternate viewpoints. It is acknowledged that although there has been significant investment in understanding the different factors that influence addiction, housing remains evidently under-researched.

Previous research has established that drug users with housing problems are dually vulnerable, which increases the likelihood that they might be excluded from research. Additionally, many homeless drug users may avoid being involved in research owing to trust, stigmatization and a lack of stability. On the other hand, many studies categorise them as a 'hard to reach' population owing to difficulty of access and their transient nature. It seems evident that those with the greatest vulnerability, such as substance misusers with housing instability, have the greatest need to be researched so as to develop targeted and appropriate support.

Studies that have compared differences between housed and not-housed drug users have frequently classified unstably housed drug users as housed or homeless, providing limited understanding of their unique problems and needs. Most of the studies have been based in the USA, with significant differences in their criteria of homeless (i.e., reporting a minimum of 1 day in last 30 days or 1 day in last 90 days). Although there are significant investigations about the differences in drug use, drug use has consistently been assessed on the basis of frequency of use rather than amount of use, which provides partial understanding of drug using behaviour. Evidence for the presence of psychiatric problems in homeless individuals remains inconclusive with some studies reporting no difference in psychiatric severity between the homeless and housed drug users (Orwin et al., 2005) and others reporting increased likelihood of reporting psychiatric problems in homeless drug users (Krupski et al., 2015).

Therefore, this thesis aimed to generate new knowledge and understanding of the association between housing circumstances of drug users with their drug use, health, well-being and motivation to change. It is estimated that the enhanced understanding may assist in improving the treatment outcomes for drug users by virtue of guiding and informing recovery planning for service users.

The aims and objectives of the research programme are stated below:

Study 1 investigated the association between housing status (i.e. No Housing Problems (NHP) or stably housed; Housed with Problems (HP) or unstably housed; and No Fixed Abode (NFA) or homeless) and drug using behaviour. The objectives of study 1 were:

Objective 1: To investigate the difference in pattern of substance use in different housing status groups on drug dependency levels, composite (i.e. total illicit) drug use, individual drug amounts and frequency of use.

Objective 2: To assess if there is a relationship between drug dependency levels and composite drug scores.

Objective 3: To assess if there is a difference between those on psychiatric medication as compared to those not on psychiatric medication within the housing groups (NFA, HP and NHP) on levels of dependency, composite drug scores, individual drug amounts and frequency of drug use.

Objective 4: To assess if there is a difference between housing groups (NFA, HP and NHP) on the basis of their OST medication on levels of dependency, composite drug scores, individual drug amounts and frequency of drug use.

Study 2 investigated the association between housing status (i.e. stably housed, unstably housed or no fixed abode) and health and well-being. The objectives of the study were:

Objective 1: To investigate if there are differences between the drug users in different housing status groups on quality of life, physical health, psychological health, levels of perceived stress, severity of generalised anxiety disorder and severity of depression.

Objective 2: To evaluate whether the use of opiates, cannabis, alcohol and stimulants predicts the self-reported physical and psychological measures of well-being.

Objective 3: To identify if satisfaction with accommodation status is related to health and well-being.

Objective 4: To evaluate if there is a difference between the housing groups on physical health, psychological health and well-being for those on prescribed psychiatric medication vs those not on psychiatric medication.

Objective 5: To evaluate if there is a difference between the housing groups on physical health, psychological health and well-being for those on OST medication vs those not on OST medication.

Study 3 investigated if there is a relationship between housing status (i.e. stably housed, unstably housed or no fixed abode) and self-efficacy and motivation to change. The objectives of the study were:

Objective 1: To investigate if there is a difference between housing groups on the readiness to change as measured by recognition, ambivalence and taking steps.

Objective 2: To investigate if there is a difference between housing groups on levels of self-efficacy.

Objective 3: To assess if there is a difference in readiness to change between the three housing groups on the basis of those who were on psychiatric medication vs those not on psychiatric medication.

Objective 4: To assess if there is a difference in self-efficacy levels between the three housing groups on the basis of those who were on psychiatric medication vs those not on psychiatric medication.

CHAPTER 2: Methodology

This chapter provides an overview of the general methods that apply to all three studies in this research programme. It includes the aims and objectives, research design, sample and research setting, general procedure section, ethical consideration, data management and statistical procedures applied.

2.1 Research aims and objectives

The research presented in this thesis investigated the association between the housing status of drug users and their drug use, health, wellbeing, and motivation to change.

To achieve this the studies in the thesis compared drug use, health, well-being and motivation to change in three groups of drug users (i.e. stably housed, unstably housed, and No fixed abode). The definitions for the housing groups provided below are mainly based on the work of the researcher within addiction services guided by conceptualisation provided by *Health matters: Rough sleeping* by Public Health England (PHE, 2020).

> *Stably housed or no housing problems (NHP)* - Individuals who view their accommodation as stable and safe such as free from hazards. Within research, ‘stable’ housing is also used interchangeably with ‘suitable’ or ‘healthy’ housing. Consistent with the definition of stable housing provided by Public Health England (2016), drug users in this category viewed themselves as ‘Not homeless, at risk of homelessness or living under other housing conditions that could be considered precarious e.g. risk from domestic abuse’.
>
> *Unstably housed or housing problems* (HP) - Individuals in problematic or unstable housing such as temporary or short-term residence. This includes individuals who are in unsuitable or problematic accommodation (such as having damp, rodents, unsafe living conditions such as risk from domestic violence, presence of drugs on

the premises or living with other drug users whose use of substances might compromise their drug treatment). For the purpose of this study, they are individuals residing in unstable, unsuitable or problematic housing who identified as being neither homeless nor stably housed.

Homeless or no fixed abode (NFA) - Individuals who are sleeping rough or sleeping in shelters on a night-by-night basis, sofa surfing at friends or the family residence on a night by night basis, staying in tents, bus shelters, train stations, parks, cemeteries, abandoned houses and cars. This included individuals who have a place to stay on a night-by-night basis, thus increasing the chances of them becoming 'literally' homeless the next day.

The research programme uses the terms stably housed or NHP, unstably housed or HP and homeless or NFA interchangeably throughout the thesis. A wider discussion on the conceptual definition of homelessness has been presented in chapter 1.

The objectives of the research programme are:

Objective 1: To investigate drug use and dependency in substance users with different housing conditions.

Objective 2: To investigate health and Quality of Life (QoL) in substance users with different housing conditions.

Objective 3: To investigate motivation and self-efficacy in substance users with different housing conditions.

2.2 Research Design

All three studies in this research programme utilised a cross-sectional, between-subjects design, which assessed the relationship between exposure and predictor variables at a single point in time only. Drug users are known to be 'hard to reach' and reluctant to engage in research studies (Draus, 2017), and are often not willing or able to engage in data collection that is extended or requires repeated data. Using a cross-sectional study design meant that this study could gather a diverse range of data to compare and contrast, whilst

also increasing the rates of participation. The cross-sectional design minimised loss to follow up and was suitable as a means to increase participation by 'hidden homeless' or rough sleepers who are known to be of a transient nature and would struggle to provide extended information or repeat the process of data collection.

Eligible participants identified themselves as belonging to one of the three mutually exclusive housing groups based on the initial screening questions about their current accommodation in the last 4 weeks and drug use (Appendix 1.3). The definition for each housing category (section 2.1) was provided and explained to each participant to ease the process of categorisation. The between-subjects variables are:

Exposure variable: housing status in the last 4 weeks, which has three levels: No housing problems (NHP), Housing problems (HP), or Homelessness (NFA).

Outcome variables: Drug dependency, Frequency and amount of drug use, Quality of life, Physical health, Psychological health, Perceived stress, Severity of depression, Severity of anxiety, Readiness to change and Self-efficacy.

2.3 Research samples and settings

2.3.1 Selection of samples

The participants for all three studies were selected via convenience sampling from a city-wide treatment service in the North of England called Forward Leeds. All participants self-identified as being current, primary illicit drug users. Demographic details are presented in individual data chapters. All participants identified their current accommodation status in the last 4 weeks as belonging to one of the three housing groups: stably housed, unstably housed or homeless. All participants were accessing services of some sort at Forward Leeds and lived within the Leeds area. Leeds is the fourth largest urban and metropolitan area in the UK with an estimated resident population of 780,000 (Office for National Statistics, 2020). It is ethnically diverse with 85% of the

population being white, 7.7% Asian, 3.5% black and 3.8% consisting of other groups. Despite having clusters of areas of high socio-economic status, there are large areas in Leeds with high levels of social deprivation, poor health and drug use.

2.3.2 Inclusion and exclusion criteria

The inclusion and exclusion criteria were utilised in a manner to ensure that the participants recruited to the study would be representative of the sample studied, appropriate to the research questions and would fulfil the main objectives of the research It was important to ensure that the participants recruited to the study did not pose a threat to other participants or to the well-being of the researcher, and that the research did not pose a threat to their own well-being.

1) All individuals who might or might not be accessing structured drug treatment at Forward Leeds but identified themselves as substance misusers and satisfied the inclusion criteria were eligible to participate. Individuals who identified themselves as actively using illicit drugs (i.e. heroin, crack, cocaine, cannabis, amphetamines) and identified as being primary illicit drug users and not primary alcohol users were eligible to participate. The research aims of this study were focussed on individuals who identified illicit drug use as their primary problem substance of use. Data on misuse of prescription opioid drugs (such as OxyContin, fentanyl or other prescription drugs) was not collected in line with the aims of the current research.
2) The studies were focussed on current drug users so did not aim to recruit individuals who were abstinent from drugs or were in detox or rehab services.
3) All individuals participating in research were aged 18yrs and over, therefore those under 18 yrs. were excluded.
4) The study excluded individuals who were accessing specialist services within Forward Leeds for severe psychiatric illness such as paranoid schizophrenia, psychosis or personality disorder. The exclusion criteria was to protect these vulnerable individuals, as they might be more

susceptible to experiencing stress when discussing their drug use or mental health and were perceived as too complex for the scope of these studies.

5) The study excluded individuals who had been recently released from prison or locked hospital wards owing to risk assessment of the research.
6) Ability to provide informed consent was vital as participants in the study had to be able to understand the possible risks and benefits of participation, and what participation would entail for them. During the data collection, participants would need to read, listen, understand and communicate their responses. Individuals who were intoxicated or under the influence of drugs would have to be excluded until they were sober.
7) For Study 3, COVID-19 restrictions applied with regards to access to Forward Leeds premises. As a health care provider dealing with vulnerable patients, Forward Leeds did not permit individuals who had symptoms of COVID-19 to enter the premises. This is elaborated in Ch. 5.

2.3.3 Sample size

The total sample for the research programme consisted of 200 participants. Studies 1 and 2 consisted of 109 participants and Study 3 comprised 91 participants. Data for studies 1 and 2 were gathered at the same time as indicated in Ch. 3 and Ch. 4. A statistical software G*Power 3.1 was utilised to determine the sample size using a small effect size (0.3) with significance set at 0.5, 3 groups and 80% power.

2.3.4 Research Setting

The setting for the data collection, Forward Leeds, is an out-patient service that provides substance use treatment to individuals living within Leeds and the surrounding areas. Posters for the research studies (Appendix 1.1a and 1.1b) and Information sheets (Appendix 1.2a and 1.2b) about the research studies were distributed to all staff at Forward Leeds and information was

emailed to those who work in mobile clinics (see details in individual chapters 3, 4 and 5). At the time of data collection for the research they had three main centres at Kirkgate, Armley and Seacroft, which essentially offered services to patients from the whole of Leeds. Clients at Forward Leeds may be referred by statutory services (i.e., prisons and probation services, GPs, hospitals, social services), charities, and family members, or via self-referral. Although most clients self-refer, there are many clients who are referred from the legal system such as those on drug treatment and alcohol treatment orders from court.

Forward Leeds was selected as a setting for research as it was the largest provider of drug services, with the largest access to a multitude of drug users in Leeds. The service has been involved in other research studies and was willing to have staff and service users involved in the current studies. The primary researcher was employed by Forward Leeds from 2007-2019. The next section briefly explains the treatment programme at Forward Leeds.

2.3.5 Treatment Programme at Forward Leeds

Once a client has been referred to Forward Leeds, he or she is briefly assessed by a staff member and booked for an in-depth or comprehensive assessment. The comprehensive assessment is an important appointment where details about the client's drug use, health, medication, social situation, employment, criminal involvement and goals for accessing treatment are gathered. Following on from this assessment, a treatment plan is created which may include pharmacological therapy and psychosocial interventions, where clients are expected to attend the clinics for psychosocial interventions.

Post assessment, the client is allocated to an appropriate team within Forward Leeds depending on the assessment and treatment plan. The client may also be seen by a nurse prescriber or psychiatrist to assess the appropriate dose of opioid substitute medication (OST) and mental health medication (i.e., prescription of anti-depressants or anxiety medication) if necessary. The client is expected to attend at regular intervals for psychosocial interventions, toxicology tests and health review. Forward Leeds consists of several services such as:

Young people's service – work with young people under the age of 18 on a one-to-one level. Individuals are mainly referred via schools, educational institutions, or concerned others. The aim is to enable a smooth transition to adult services.

Harm reduction service and needle exchange - offers advice and guidance on safer injecting as well as alternatives to injecting drugs, providing clean injecting equipment, home visits and outreach for clients with disabilities. Most drug users within the city will have engaged with harm reduction services at some point of time in their drug-using trajectory. It is often the initial point of contact for all opiate, crack, cocaine, amphetamine users before referral to structured treatment services.

Recovery Team - which consists of the structured drug treatment services offering pharmacological and evidence based psychosocial interventions (such as motivational interviewing, cognitive behavioural therapy and motivational enhancement techniques). Currently, substitute treatment is offered to opiate users only, who are prescribed a long-acting synthetic opiate substitute medication (OST), usually methadone or buprenorphine. The dosage is assessed by a prescriber (i.e., doctor or a nurse prescriber), and administered orally. Whilst being prescribed, the patients are also required to be seen by a recovery coordinator, who is a trained member of staff who delivers evidence-based psychosocial interventions and assesses progress via set outcome measures (e.g., treatment outcome profile survey). Recovery coordinators will often use standardised psychometric tools to assess and monitor progress as per the treatment plan agreement.

There is a select group of recovery coordinators who specialise in structured treatment for primary non-opiate users (i.e., cannabis, ketamine or new psychoactive substances such as mephedrone, NRG and laughing gas) and primary alcohol users. The recovery team offer medical treatment for alcohol users on the basis of individual assessments along with psychosocial interventions.

Detox and rehabilitation team - This is offered primarily to opiate and alcohol users who have demonstrated a requirement in their individual assessments.

Detoxification is the process in which an individual eliminates a drug from their system in a safe and effective manner (Pilling et al., 2007). The process of detox can take place at home or an agreed detoxification service, where other health conditions and mental health needs can be managed effectively.

Outreach services for rough sleepers - Forward Leeds offers specialist support to individuals who are classed as homeless or rough sleepers. The team works flexibly in partnership with other services to offer face-to-face support and advice to individuals to meet their addiction, physical and mental health needs.

Specialist Team - The specialist team consists of psychiatrists, psychologists, nurses, specialist midwives and specialist practitioners trained in dual diagnosis. They also work with pregnant drug users ensuring seamless treatment through and post pregnancy. Additionally, individuals who present with severe and enduring mental illness along with their addiction needs would be seen by the specialist team. The specialist team have an additional presence at in-patient hospitals where they may assist individuals' transition from hospital to community settings.

Forward Leeds drug and alcohol services work in partnership with other services such as Big Issue, St Annes RAISE, street outreach services, and specialist housing departments. All participants for the research were accessing some form of service at Forward Leeds after having identified themselves as having drug-related problems.

2.4 Ethics

In line with most health-related research, the design and execution of the studies prioritised ethical considerations. All three research studies were approved by the Ethics committee at the School of Psychology at the University of Leeds (ethics reference: 16-0032 in 2015, 17-0221 in 2016 and PSYC-250 in 2021). In addition to this, Forward Leeds provided permission for research (Appendix 1.4) after gaining approval from the senior management and operational directors at the service.

2.4.1 Informed Consent

Participants were fully informed about the study. Prior to data collection, prospective participants were screened (Appendix 1.3) which enabled appropriate exclusion such as primary alcohol users, or individuals diagnosed with complex mental health problems. Participants were provided with information about confidentiality and anonymity, voluntary participation and the right to withdraw a minimum of 24hrs. prior to participation in the research studies. Each participant was provided with an information sheet (Appendix 1.2a or 1.2b) that contained: information about the purpose of the study, details about researcher, the procedure of data collection, right to withdraw their data and information about how the data will be used in the future e.g., publications and presentations to service users and staff.

It was clarified that participants who attended interview sessions under the influence of drugs and alcohol would be deemed unsuitable for the study owing to their inability to provide informed consent. They were advised that they would be given the opportunity to rearrange the interview.

2.4.2 Confidentiality and Anonymity

Due to the nature of the study, it was expected that participants would be engaged in current or recent illegal drug taking and may be drinking alcohol over the recommended daily allowances (as a secondary drug). Confidentiality and anonymity was therefore of the utmost importance. All participants were asked to generate an individual, memorable PIN (Appendix 1.5) which was used to link the response data from the participants, thus maintaining anonymity and confidentiality.

For study 3, the clinical team from Forward Leeds gathered data and followed standard confidentiality procedures where they did not disclose information about who had participated and who had not to any individuals outside the select clinical team who were assisting in data collection. In addition to this, the use of PINs meant that post data collection, the clinical team would not be able to identify and match responses to data sheets (see Ch. 5 for details).

2.4.3 Participant Welfare

Most of the questionnaires used in the research programme were standardised tools that are routinely utilised by drug services. There was a high likelihood that many drug users would be familiar with some of the questionnaires, but even if they were not the questionnaires were simple, easy to understand and required minimal writing skills (i.e., responses required tick box or yes/no responses). There was access to a staff pool of interpreters for participants who were unable to read or understand English, although none of the participants required this service.

Although the questionnaires did involve gathering information about sensitive topics (such as mental health and drug use), it was anticipated that none of the questions asked at the data collection would be distressing or emotionally provoking. During the screening (Appendix 1.3) the researchers were able to exclude participants who were diagnosed with complex psychological problems that would make them more vulnerable to distress. However, if participants were to get upset, the researcher and the clinical staff had significant training and expertise in managing such situations and would be able to de-stress the participant and the interview would be terminated. However, none of the participants reported feeling uncomfortable or stressed by the data collection questions.

2.4.4 Incentive for participation

All three studies offered an incentive for participation. Studies 1 and 2 offered a £5 love-to-shop gift voucher which justified and recompensed participants for offering 30-40 minutes of their time. For study 3, participants were offered the opportunity to be entered into a prize draw with the 1st, 2nd and 3rd prize being £50, £25 or £15 love-to-shop voucher. The voucher could be redeemed to purchase home or food items. It was anticipated that providing an incentive would enhance motivation for individuals to participate in the study and was a better alternative to giving cash (which might be used to buy drugs/alcohol) or giving food items (which might perish or not meet dietary needs).

2.4.5 Self-reported data on substance misuse

For the purpose of the research programme, all data on substance misuse was collected via self-report. Obtaining data on drug use predominantly takes place via two means: self-reporting from drug users or objective measures of analysis such as urine toxicology tests. Many researchers rely on urine analysis as a means of concrete evidence on drug use and it remains the predominant method utilised by courts and other legal services to assess drug misuse. However, objective measures bring significant disadvantages to research such as additional costs, varying and narrow windows for detection and inaccuracies (Lavori et al., 1999; Winhusen et al., 2003). To elaborate, objective measures are limited in the amount of information they provide, such as length or frequency of use. A drug user who consumes drugs daily will indicate the same positive test as a drug user who consumed the same drug once that week. This is reiterated by Wolff et al. (1999) and Darke (1998) who state that biochemical markers such as saliva test and radioimmunoassay of hair strands along with urine analysis are costly, intrusive and limited with regards to providing information on history, frequency and quantity of drug used.

In the UK, substance misuse data at a national level is collected via self-reported means such as the Treatment Outcome Profile survey (Marsden et al., 2008). All clients who access Forward Leeds treatment services provide information via the treatment outcome profile surveys, which is completely self-reported. However, clients in structured treatment are expected to provide urine samples for testing which varies from client to client e.g., clients on drug treatment orders have weekly tests and clients on opioid substitute treatment can have fortnightly or monthly tests. In comparison, clients accessing non-structured services such as harm reduction or needle exchange services solely rely on self-reported means of collecting information.

There are several advantages of self-reported data, which provides a wider picture with richer data on details that could not have been gathered from any other means (Wilcox et al., 2013). Additionally, self-reported data is easier to manage, cost effective, and can be quantified for analysis in an effective

manner. For the purpose of this research programme, the questionnaires were mostly completed at Forward Leeds where individuals would be familiar and at ease in talking about their drug and alcohol use.

A number of studies are in consensus that there is high reliability in self-reporting of substance use over varying recall periods, and for drug users both in and out of treatment (Darke, 1998; Adelekan et al., 1996). The current study recruited active drug users in whose drug use was confirmed by their consent for participation in this research study. At screening and data collection, it was evident that most of the participants were attending drug services even if it was not structured treatment. It was anticipated that the participant would have limited incentives to distort the accurate reporting of drug use as the researcher was not permitted to or intended to share information with the prescribing team. To limit the disadvantages incurred by self-reported data, certain measures were put into place such as providing assurance to drug users that the information disclosed via research would remain confidential and would not be disclosed to the treatment services. A contract was drawn at the preliminary stage with Forward Leeds to clarify that the researcher was not obligated to disclose any information about a participant with regards to any of the variables collected. The researcher assured participants that no identifying information would be entered into the research database and all the analysis would be completed by the researcher or agreed clinicians (for study 3 only).

2.4.6 Researcher wellbeing

During study 1 and 2, the lead researcher completed screening and collected all the data. To ensure additional safety the main supervisor was informed of every visit via text, all data collection was at Forward Leeds premises which was staffed, and alarms are available in each clinic room. Forward Leeds staff were aware of the data collection meetings and the location of the researcher while she was in the premises. The researcher would text the main supervisor when she left the building. It was agreed that if the researcher felt unsafe in any way, the data collection meeting would be terminated, and the main supervisor would be informed. It was anticipated that since the researcher was employed by the services, she would not endure any greater risk than she

experienced on a day-to-day basis. Each room in the building where data was collected is fitted with an alarm for the safety of staff and clients.

During study 3, owing to the COVID-19 restrictions, the data collection was collected by a select clinical team at Forward Leeds in agreement with the senior management. The researcher trained and supervised the clinical team who expressed an interest in being a part of the team for data collection (see Ch.5 for details). Highly qualified and experienced members of the team followed the protocols agreed by Forward Leeds and the Ethics committee at the School of Psychology, Faculty of Medicine and Health at University of Leeds. The lead researcher, a qualified psychologist, offered supervision for the clinical team if the need arose.

2.5 General Procedure

2.5.1 Structured interviews and questionnaires

All three studies utilised structured Interviews and questionnaires (Appendix 2.0 to 2.5) to collect data about the drug users' housing status and their drug use, dependency, health, quality of life, motivation to change and self-efficacy. All participants were provided definitions of the housing categories (see section 2.1) and the timeframe operant was within the last 4 weeks. Structured interviews utilised standardised questionnaires or a set of questions that were ordered in the same manner. Further, structured interviews ensured the reliable aggregation and comparison between sub-groups (i.e., the three housing groups) in the sample studied. Like most structured interviews, the responses to the questions asked in all three studies varied between close-ended responses (such as 'yes' or 'no' responses) or quantifiable responses on a Likert scale for e.g. from 1 to 5 or 1 to 20.

A major advantage of structured interviews are that they are administered in a standardised method as the researcher asks the same questions to all participants. Most drug users accessing any form of drug services are familiar with structured interviews, where data is routinely collected via structured interviews (such as the treatment outcome profile survey) by treatment services as mandatory requirement by Public Health England. Some

participants preferred to complete the questionnaires themselves (using paper and pencil) whilst others preferred the researcher to read out the questionnaire and fill in their responses.

The data collection interviews in study 1, 2 and 3 were mainly administered face-to-face in a clinical setting, at one of the designated offices of Forward Leeds. Several national level addiction studies in the UK have been administered using face-to-face structured interviews (Gossop et al., 2000). Face-to-face interviews have the advantage of being easier to control for environmental factors such as pre-agreed time and place, reading facial and body language cues to assess levels of distress and pacing the questions on the basis of participants' comfort level.

During data collection for studies 1 and 2, the lead researcher was employed by Forward Leeds and was able to collect all the data for the studies. During data collection for study 3, the researcher was no longer employed by Forward Leeds and there were national, local and organisational COVID-19 restrictions which prevented the researcher from having face-to-face contact with the drug users. Therefore, the data from the questionnaires (Appendix 2.4, Appendix 2.5 and Appendix 2.6) were collected by a select clinical team (all employed by Forward Leeds) including members of the recovery, outreach and harm reduction services who continue to meet and support drug users across the local area. It was ensured that all clinicians involved in study 3 were trained and supported effectively by the main researcher to do the data collection in a standardised manner. All participants were offered the option to provide the data via phone if they were not comfortable in self-completion or did not wish to complete the data collection with their recovery coordinator or were unable to access the services (for example, if they were isolating with a small child, had mobility problems, or were shielding owing to COVID-19). The lead researcher was available via phone so that participants who wished to speak to the researcher for further clarification about consent and confidentiality could do so in a safe manner.

2.6 Measures

Individual measures utilised to investigate variables in each study are discussed in individual data chapters (Ch 3, Ch.4 and Ch.5). The research programme gathered information about: age, gender, housing status, primary drug/drugs or alcohol use, diagnosis of mental health problem, prescribed medication such as psychiatric medication or opiate substitute treatment medication. Data on misuse of prescription opioids such as fentanyl, OxyContin, sleep medication or stimulants was not collected for the current research. The primary objective of this study was to examine the influence of different kinds of housing conditions on drug users. Participants self-reported their housing conditions in the last 4 weeks as one of the three: stably housed, unstably housed or homeless. This information was gathered at both screening and data collection stage.

2.7 Data Management

2.7.1 Data protection

Data protection was done in accordance with the procedures of the University of Leeds Research Ethics committee (2015, 2016, 2021) and the Helsinki Declaration in 1983 (World Medical Association, 2013). All data sheets and information about participants were anonymised with a unique PIN (Appendix 1.5) and stored in a locked cabinet at the research programme site or the University of Leeds. A database containing the PIN and corresponding responses were stored on a University of Leeds encrypted laptop in a locked cabinet accessible only to the researcher.

2.7.2 Missing data and Outlier management

In study 1 and 2, the data collection was completed by the same researcher, who found there were no missing data in any of the questionnaires. In study 3, the research was carried out by various members of the clinical team, and some of the questionnaires had missing data. The authors of SOCRATES (Miller and Tonigan, 1996) and the General Self-Efficacy Scale questionnaire (Schwarzer and Jerusalem, 1995) have not provided any instructions on

dealing with missing or incomplete data. Therefore, any data sheets that had missing or omitted responses were excluded from the study.

The data indicated the presence of a few outliers, which are extreme values that are numerically different as compared to those observed in the sample. Outliers were detected initially by looking at the raw data for extreme values and then by utilising SPSS (SPSS Windows, version 26) where outliers were identified as points that were lying beyond the box plot's whiskers (Aguinis et al., 2013). Where outliers were detected, they were first checked against the raw data for accuracy of recording and for valid responses. It was noted that the outliers were valid but extreme responses. One of the methods of managing outliers was to recode the response score with the preceding highest or lowest value so that they fit within the normal distribution while remaining extreme and deleting the extreme scores. All of the studies in the current research programme report outlier corrected data.

2.8 Statistical Procedure

The data was analysed using SPSS version 26 (IBM Corp, 2016; IBM Corp, 2020). The presence of outliers and a normal distribution among the variables were checked. All variables were screened for skewness and kurtosis using histogram and basic computation as specified by Tabachnick and Fidell (2001), where both skewness and kurtosis are significant factors in assessing a normal distribution. Data was assessed for homogeneity of variance and normality of distribution prior to statistical analyses. If these were violated, non-parametric equivalent tests were conducted.

To assess group differences in the different housing status groups one-way between subjects ANOVA were conducted. One-way ANOVA was used to examine the influence of one variable (i.e., housing condition) on the outcome variables for e.g., amount of heroin, QoL or level of dependency. Non-parametric tests and post hoc tests were utilised where applicable, as discussed in individual chapters. Multiple regression and Pearson's r or Spearman's r correlation coefficient were utilised depending on the research aims of the studies where selection of the statistical test was based on the research question. 3 by 2 between subjects ANOVA were utilised to analyse

association between psychiatric medication and OST medication on the variables studied, where data was analysed using appropriate parametric and non-parametric tests.

Significant main effects of group were further investigated using post hoc t-tests and adjusted for multiple comparisons using Bonferroni correction. Multiple comparisons increase the likelihood of a false positive occurring even when a difference is not present (also known as a type 1 error). The Bonferroni correction was proposed as a means to circumvent the likelihood of a type 1 error occurring (Armstrong, 2014). The two most common methods used are either by dividing the alpha level by the number of comparisons (e.g., if comparing 5 comparisons the 0.05/5 = 0.001, where 0.001 is the new alpha for post hoc test) or by multiplying the level of significance achieved by the number of comparisons (e.g., if post hoc p value was found to be 0.013, this would be multiplied by number of comparisons to indicate the new alpha 0.039). SPSS software (version 26) automatically utilises the Bonferroni correction using the latter procedure to indicate an adjusted alpha value which if less than 0.05 is significant. All analyses that used ANOVA in the research studies have utilised Bonferroni correction.

In summary, this chapter provided an overview of the methodology of the research programme. Details about specific measures and procedures utilised will be discussed in individual chapters.

CHAPTER 3: The association between housing status and drug use behaviour

3.1 Introduction

Most developed countries recognise homelessness is an important public health issue (Ministry of Housing, Community and Local Government, 2021; Nasmith et al.,2020), in the UK there were an estimated 282,000 individuals or households categorised as homeless or threatened with homelessness in 2022 (Crisis Homeless monitor, 2022). One of the factors that is most commonly associated with homelessness is substance misuse (Commons Library Research Briefings, 2021) or substance misuse disorder.

Prevalence rates of substance use disorders (SUD) among homeless population is significantly high (Office for health Improvement and Disparities, 2021), with a range from 8.1% to 58.5% for alcohol dependence and 4.5% to 54.2% for drug dependence (Fazel et al., 2008). Studies have also identified a greater proportion of homelessness among SUD patients, estimated to be approximately seven times higher than the general population (Kemp et al., 2006). It has been argued that substance use disorders are intricately linked with homelessness (McVicar et al., 2015; Thompson et al., 2013; Kemp et al., 2006; Johnson and Chamberlain, 2008), with research attributing SUD as both a cause for entry and a barrier for exit from homelessness (Neale, 2001; Johnson et al., 1997). As elaborated in Ch. 1 sec 1.7.1, Johnson et al. (1997) suggests that individuals with SUD often deplete social and financial resources and deteriorate into homelessness or alternatively gravitate towards problematic drug use during the homelessness which in turn impedes their exit from homelessness. For example, previous studies suggest that the use of heroin and crack, strongly associated with homelessness (Fischer et al., 2006) are also substances that predict poorer outcomes in attaining stable housing. Additionally, episodes of homelessness are longer for individuals diagnosed with SUD (Johnson and Chamberlain, 2008), and is often associated with greater risk behaviour (Topp et al., 2013) such as public injecting or injecting larger quantities of drugs more often. Additional challenges among homeless drug users is the presence of comorbid psychiatric disorders (Teeson et al.,

2004) and physical health problems (Klee and Morris, 1995; Tsai and Wilson, 2020) such as bacterial infection and increased exposure to HIV and Hepatitis C. The presence of mental illness, economic problems and SUD among homeless individuals significantly raises the risk of drug overdose (Baggett et al., 2013; Bauer et al., 2016), where drug overdose is a leading cause of death among homeless people (Baggett et al., 2013). Studies on laboratory animals have suggested that deprived, stressful and isolated living conditions are indicative of poorer outcomes from SUD (Alexander et al., 1978; Solinas et al., 2010).

Further, the risk of mortality in homeless is often related to drug related risk behaviour. A study in Australia (Topp et al., 2013) comparing stably and unstably housed injecting drug users (IDU) suggested that unstably housed IDU were engaging in higher risk behaviour associated with their drug use such as the sharing of injecting paraphernalia, injecting in public and being injected by another person. The unstably housed also indicated a reduced likelihood of accessing needle-exchange services as compared to stably housed IDU. Interestingly, the study categorised unstably housed with homeless, where unstable housing according to the Australian federal government definitions (Commonwealth of Australia, 2008), includes categories of primary homelessness (rough sleeping), secondary homelessness (staying with friends/family or specialist services with no fixed address) and tertiary homeless (short and long term accommodation in hostels, boarding houses with no secure lease and no private facilities). The study by Topp et al. (2013) did not examine detailed information about differences in dependency levels or drug use between the housing categories. Additionally, the study primarily focussed on injecting behaviour, so only drugs that were injected most recently such as heroin or methamphetamine were mentioned. The study did not provide further information on differences in frequency or amount of drug use between the housing categories.

A study that investigated differences in frequency of drug use between homeless and non-homeless drug users (Krupski et al., 2015) indicated that homeless drug users had higher drug severity, and greater drug and alcohol combined scores. They also suggested that homeless drug users had lower

likelihood of marijuana use and greater likelihood of using stimulants, alcohol and nicotine as compared to housed counterparts. Another study that compared homeless vs housed drug users by Doran et al., (2018), indicated that as compared to housed drug users homeless drug users had higher rates of drug and alcohol use and identified as having greater problems with crack/cocaine and heroin in the previous year. Both Krupski et al. (2015) and Doran et al. (2018) investigated drug users in the USA, who were not seeking drug treatment. Importantly, their studies did not investigate drug use among 'unstably' housed drug users as a separate category.

Another study in the USA by Eyrich garg et al. (2008) examined drug using behaviour among unstably housed as a separate category, where they compared differences between literally homeless, marginally housed (similar to unstably housed) and housed poor and not poor categories (based on financial income of the household). Interestingly, their study found that literally homeless and marginally housed drug users were similar in their severity of drug use and on their cocaine and heroin use. The differences, however, emerged in spending patterns where literally homeless spent significantly more money on drugs than marginally housed. The study did not elaborate on why literally homeless were spending more money on drugs if their frequency of use was similar marginally housed. The discrepancy could be explained by differences in quantity of drug use, where the study did not investigate differences in amount of drug used between the housing categories. Although the frequency of drug use is important, it does not yield direct insight into amount of drug consumed (for e.g., 0.1gm of heroin per day is different to 1gm per day). Importantly, the quantity or amount of drug consumed can be indicative of tolerance levels, risk behaviour, severity of dependence and possibly duration of use.

In summary, studies that examine SUD in homeless populations within the UK have mostly been prevalence studies (Fountain et al., 2003; Kemp et al., 2006) which provide partial insight about the drug using behaviour of homeless people and no information about how they compare to drug users in other housing circumstances. Studies from Australia and USA (Doran et al., 2018; Topp et al., 2013; Eyrich-garg et al., 2008; Krupski et al., 2015) that have

compared homeless and housed drug users do not provide a broader understanding about drug using behaviour such as information about the amount of use in each drug category. Additionally, many studies mentioned above have relied on large databases to gather information where information could vary depending on where it was collected and who was collecting the information (e.g., information disclosed at drug services could vary from information disclosed at A&E services). For example, Krupski et al. (2015) study was the secondary analysis of data gathered at primary care clinics and in Doran et al. (2018) study, data was gathered at a large emergency department where a high proportion of primary alcohol users attended.

The current study focussed on primary illicit drug users as a means to bridge the gap in understanding. Additionally, the comparative studies mentioned above were conducted within a very different population to the UK where the healthcare systems, social support system and challenges faced by the population are systematically different to the UK. Therefore, the aim of this study WAS to investigate if there is an association between housing circumstances (i.e., stable housing, unstable housing and homelessness) and different patterns of drug use and drug dependency levels.

In addition, the current study aimed to identify if OST or psychiatric medication is associated with differences in the drug using behaviour between the housing groups. With changes in SUD treatment in UK, a large proportion of drug users are prescribed OST and psychiatric medications within drug services as a part of their overall recovery plan, with a view to address both psychological and substance related problems. Limited studies that have assessed the efficacy of psychiatric medication among drug users (Nunes and Levin, 2004) have been restricted to primarily focusing on measuring psychological outcomes such as levels of depression. Other studies (Nunes et al., 1997) have confirmed inconclusive results where individuals on antidepressants reported improvements in mood but an inconclusive effect on substance use, where drug tests indicated contradictory results to their self-reported improvements in drug use. The studies did not provide any further details about the effect of medication on drug dependency, amounts of drug use or the housing circumstances of the sample. Previous studies have acknowledged that the

level of adherence to OST is significantly low in homeless, mentally unwell, drug users (Parpouchi et al., 2017) which makes it important to understand how this compares to drug users in other housing circumstances or if the prescribing of OST or psychiatric medication is equally effective for drug users in variable housing circumstances. Therefore, the current study also aimed to identify if OST or psychiatric medication was associated with differences in the drug using behaviour between the housing groups.

3.2 Research aims and objectives

The objectives of this study were to assess differences in the drug use and dependency of substance users based on their housing status groups, where there were three distinct categories:

No housing problems or stably housed (NHP)

Housed with problems or unstably housed (HP)

No fixed abode or homeless (NFA)

The definitions for each category are explained in Chapter 2, section 2.1.

Objective 1. To investigate the differences in patterns of drug use in current drug users in different housing status groups (NHP, HP and NFA) on the following measures:

1. Drug dependency level
2. Composite drug scores (Total illicit drug use i.e. total of opiates, cannabis, crack, cocaine and amphetamine amounts consumed in last 28 days).
3. Use of individual illicit drug and alcohol total: Alcohol, Opiates, Cannabis, Crack and Stimulant in last 28 days. Opiates included illicit heroin and morphine but did not include prescription opioid drugs.
4. Frequency of drug use in last 28 days: Alcohol, Opiates, Cannabis, Crack and Stimulant.

Objective 2. To assess if there is a relationship between drug dependency levels and composite drug scores.

Objective 3: To assess if there is a difference between those on psychiatric medication as compared to those not on psychiatric medication within the housing groups (NFA, HP and NHP) on levels of dependency, composite drug scores, individual drug amounts and frequency of drug use.

Objective 4: To assess if there is a difference between housing groups (NFA, HP and NHP) on the basis of their OST medication on levels of dependency, composite drug scores, individual drug amounts and frequency of drug use.

3.3 Method

3.3.1 Study design

The study employed a between-subject, cross sectional design to assess the difference in drug use and dependency levels in current drug users with varying housing circumstances. The between subjects' variables for the study were:

Exposure variable: housing status in the last 4 weeks which has three levels; no housing problems (NHP) or stably housed, housing problems (HP) or unstably housed, or homeless or No Fixed Abode (NFA). See chapter 2 for detailed description or sec 2.1 for brief description of these groups.

Outcome variables:

1. Composite drug scores: the sum of individual drug total scores (excluding alcohol) which was amount multiplied by frequency of use in the last 4 weeks.

2. Individual drug amounts: the amount of specific drug taken in the last 4 weeks (Opiate total, Cannabis total, Alcohol total, Stimulant total, Crack total). This was calculated from the TOPS form (Appendix 2.0) where amount of drugs taken per day was multiplied by the frequency of use in the last 4 weeks.

3. Frequency of use: the number of days the drug was taken in the last 4 weeks (Opiate frequency, Cannabis frequency, Alcohol frequency, Stimulant frequency, Crack frequency). Frequency of stimulant use was a combined frequency of cocaine, crack and amphetamine in the last 4 weeks.

4. Dependency: drug dependency scores as measured by the Leeds Dependence questionnaire. For the purpose of the current study, drug dependency specifically focussed on the primary problem substance/substances as indicated in Table 3.0.

3.3.2 Study sample

Participants for this study comprised 109 current drug users: there were 25 (23%) females and 84 (77%) males. The age range was between 19-70 yrs. of age as individuals accessing Forward Leeds are between the age of 19 yrs. to 70 yrs., although exact age of participants was not collected. All participants were accessing some form of service at Forward Leeds, a drug and alcohol service in Leeds after having identified themselves as having drug related problems. Details about the service and the process of accessing the service is provided in Chapter 2 and the characteristics of the study sample are provided in section 3.8, table 3.1 below.

3.3.3 Inclusion and Exclusion

Complete details of the inclusion and exclusion criteria for the current study are presented in Chapter 2. All individuals accessing or not accessing drug treatment who identified themselves as a current illicit substance misuser and satisfied the inclusion criteria were eligible to participate. Drug users with severe psychopathological conditions (such as diagnosed with schizophrenia, psychosis), and high risk of violence were excluded as were those who identified alcohol as their primary drug of use. Individuals diagnosed with depression and anxiety on commonly prescribed psychiatric medication (i.e., antidepressants and anxiety medication) were included in this study

3.3.4 Measures

The data collection comprised of standardised questionnaires that used paper and pencil as follows:

Modified Treatment Outcome Profile Survey (TOPS, Marsden et al., 2008)

The TOPS (Appendix 2.0) is a validated national outcome monitoring tool for substance misuse services developed by the National Treatment Agency (was replaced by Public Health England and now replaced by Office for Health Improvement and Disparities, 2023). It is commonly used in treatment services locally and nationally in the UK. It is a short and simple instrument used for monitoring and measuring changes in drug use, crime, training, employment, housing, health and well-being the last 28 days or 4 weeks. The TOPS consists of four sections measuring:

Drugs used: Alcohol, Opiates (illicit heroin or morphine), Crack, Cocaine, Cannabis, Amphetamine and other drugs (number of days of use in last four weeks and the average amount of use each day),

Injecting risk behaviour (number of days' drugs were injected in last four weeks, use of shared needles (Y/N) and shared drug paraphernalia (Y/N).

The third section is Health and social functioning which is elaborated in chapter 4 of the current thesis. The modified version (for the current study) excluded the fourth section as it was not consistent with the research objectives of the current study which did not require information on crime status, current training and employment

An additional question on 'Housing problem' was created asking participants whether they had a housing problem (unstable housing/ risk of eviction), were Homeless (no fixed abode) or in Stable housing (Y/N) in the last 4 weeks. To achieve this, participants identified themselves into one of the three categories based on their accommodation status:

Homeless or No Fixed Abode (NFA),

Unstable accommodation or housing problems (HP) or

Stable accommodation or no housing problems (NHP).

The detailed definitions for the categories are elaborated in Chapter 2 section 2.1. The TOPS was found to be a reliable and valid tool for measuring treatment outcomes in a sample of 1021 drug user aged 16-62 in England

(Marsden et al., 2008). Intraclass correlation coefficient for scale measures and Cohen's kappa for dichotomous measures reached or exceeded 0.75 and 0.61 respectively. It has satisfactory validity assessments and change sensitivity of scale items judged by effect size and smallest detectible difference (Marsden et al., 2008). Additionally, the TOPS was found to be valid and reliable in detecting common mental health disorders in drug services (Delgadillo et al., 2013).

Leeds Dependency Questionnaire (LDQ, Raistrict et al., 1994)

The LDQ (Appendix 2.3) is a 10-item, continuous, self-completion scale that is designed to measure drug dependence across a range of substances in the last 2 weeks. The LDQ mainly focuses on the psychological aspects of substance dependence and maps onto the ICD-11 and DSM-V-TR criteria for substance dependence (Massah et al., 2019; Kelly et al., 2010). The designers of LDQ have utilised the psychological phenomena as a way where it also captures insight into the physiological phenomena such as withdrawal and tolerance (Raistrick et al., 1994). The scale measures dependence or severity by evaluation of markers of dependence such as compulsion to use, planning on procuring substances, the perceived compulsion to continue to use, using methods to maximise effects experienced, and belief that the substance is essential to one's existence. The LDQ is a 0,1,2,3 scale according to frequency ranging from 0 (never) to 3 (nearly always). The range of scores from 0 -30 on LDQ are intended to capture the "graded intensity" of the dependence where higher LDQ scores indicate higher dependency (Ford, 2003). There is no cut off points provided by the questionnaire for low, moderate or severe dependence but authors of the questionnaire at Leeds Addiction unit provided a recommended guideline for using the questionnaire as 0=no dependence, 1-10= low to moderate dependence, 11-20 = moderate to high dependence and 21-30= high dependence (Paton-Simpson and MacKinnon, 1999).

The LDQ been validated for use in alcohol and opiate users in addiction and psychiatric settings where Cronbach's alpha was 0.94 and test-rest reliability was found to be high (r= 0.95) (Ford, 2003). Another study by Tober et al.,

(2000) indicated that the LDQ has demonstrated utility as a measure and is sensitive to change in response to SUD treatment among adults treated for alcohol and opiate dependence.

3.3.5 Ethical Approval

Ethical approval for the study was granted by the Ethics committee at Faculty of Medicine and Health at University of Leeds (ethics reference phase 1:16-0032 in 2015 and ethics reference phase 2: 17-0221 in 2016). Permission from Forward Leeds was granted for research on premises (Appendix 1.4).

3.4 Procedure

The study posters (Appendix 1.1a) and information sheets (Appendix 1.2a) were distributed among various Forward Leeds staff, including needle exchange workers, outreach workers, group facilitators, specialist housing workers, York Street health practice staff, Big Issue staff, Forward Leeds homeless breakfast club staff, Forward Leeds service for complex drug users and those involved with street homeless drug users. All staff were requested to share the posters and information sheets with potential participants. In addition, the Lead researcher (LR) also sent emails to shared-care recovery coordinators who provide Forward Leeds drug treatment at GP surgeries in Leeds, informing them about the study. Forward Leeds staff were invited to attend brief sessions about the study where staff had the opportunity to raise any questions or concerns about it. Many clients at Forward Leeds took away study information sheets and posters for ‘friends, partners and associates’ who they thought might be suitable for the study.

Potential participants expressed an interest by either dropping into the service, via phone or letting the LR know in person. All interested Participants were screened for eligibility through a short screening process (Appendix 1.3) either face to face or over the phone. If deemed as not suitable for study, personal information was destroyed immediately in a confidential manner. Participants who were suitable for the study were given or posted the participant information sheet (Appendix 1.2a) with a minimum of 24 hours prior to data

collection, allowing time to make an informed decision. This was followed by a date and time for the data collection session at a convenient FL premises.

On the day of data collection participants were asked to sign an informed consent sheet (Appendix 1.6) and complete a PIN Generation Form (Appendix 1.5). This PIN was assigned to all scoring and signing in sheets. Consistent with standard practice at FL, all participants were offered a choice between being read the questions aloud by the researcher or reading the questionnaires themselves. Most participants preferred the researcher to read the questionnaires aloud and fill in the responses as directed by them which involved putting ticks, circles and numbers as directed.

The questionnaires were in paper format and were in the order of modified version of Treatment Outcome Profile Survey (TOPS; Appendix 2.0) and Leeds Dependence Questionnaire (LDQ; Appendix 2.3).

The data collection was in a private room at pre-agreed Forward Leeds premises which was safe, quiet and easily accessible for participants. The researcher ensured that there was paper, pens and drinking water available in the room. External stressors were minimised as all sessions were with the same researcher and none of the sessions were electronically recorded at any time. Personal identifiers such as name, date of birth, address, and postcode was not recorded at any point of the study.

On average the data collection took 30-40 minutes per session. Participants were only required to complete the questionnaires once. On completion of the data collection, each participant was reimbursed with a £5 value love-to-shop voucher which could be redeemed to purchase home or food items.

3.5 Statistical Analysis

The data was analysed using SPSS version 24 (IBM Corp, 2016; 2020). All variables were screened for and skewness and kurtosis using histogram and basic computation as specified by Tabachnick and Fidell (2001). Data was assessed for homogeneity of variance and normality of distribution prior to statistical analyses. If these were violated non-parametric equivalent tests were conducted.

To assess differences in amount, frequency and dependency of drug use in the different housing status groups one-way between subjects' ANOVA or non-parametric equivalent tests were conducted. For the analysis for amount and frequency only those participants who were using the substances were included in the analysis when comparing all three housing groups (e.g. only those who were using alcohol within the sample were assessed for amount or frequency of alcohol). Table 3.1 provides information about the percentage of each group that used each of the drugs. The analysis only included those that were using the specific drugs in order to identify any differences in drug use by those who were using specific drugs without contamination of the data by those who were not using the drug in each housing category. Significant main effects of group were further investigated using post hoc t-tests or non-parametric equivalent and adjusted for multiple comparisons using Bonferroni correction. Amphetamine and cocaine were excluded from the individual drug total and frequency analysis as there were three or less participants who disclosed amphetamine and cocaine use in the unstably and stably housed categories. However, amphetamine, cocaine and crack were included in analysis under the stimulant category where stimulant amount or stimulant frequency consisted of the combined scores of amphetamine, cocaine and crack. In terms of risk behaviour, none of the participants reported sharing drug related paraphernalia.

A 2 by 3 between-subject ANOVA was planned to analyse whether there were differences in drug use of participants who were currently taking psychiatric medication or OST medication vs those not taking medication in each of the housing groups. When Levenes test was violated, the data was analysed using appropriate parametric and non-parametric statistics such as Independent t-tests, Mann-Whitney U tests and Kruskall-Wallis H tests. Comparison between those on OST and not on OST medication indicated that 80 participants (73%) were on OST medication and 29 participants (27%) were not on OST medication (see table 3.1). Owing to the small sample size, those not on OST were excluded from the analysis for this study.

Characteristics of the study sample

All participants reported having used illicit drugs in the last 4 weeks. The majority of study participants reported opiate use (74%) followed by crack (61%), alcohol (56%), cannabis (50%), cocaine (10%) and amphetamine (9%). Opiate category consisted of illicit heroin use only as reported by the sample and did not include prescription drugs. Overall, 74% of the sample identified opiate as the primary problem substance, but many individuals identified with more than one problem substance. Within the sample, 73% of participants reported being on opiate substitute treatment and 44% reported being on prescribed psychiatric medication for mental health problems. 44% of all participants identified as being injecting drug users, but none of the participants reported sharing needles or injecting equipment.

Table 3.0: Primary problem substance* of participants

Primary problem substance	NHP (n=35)	HP (n=36)	NFA (n=38)
Opiate	23 (66%)	29 (81%)	29 (76%)
Cannabis	5 (14%)	5 (14%)	0 (0%)
Crack	15 (43%)	20 (55%)	23 (61%)
Cocaine	1 (2%)	0 (0%)	1 (3%)
Amphetamine	0 (0%)	0 (0%)	2 (5%)

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.

*many participants identified as having more than one primary problem substance.

Table 3.1: Participant Gender and Substance Use by Housing Status

Number of Participants	NHP (n=35)	HP (n=36)	NFA (n=38)
Gender Male/ Female	27: 8	29:7	28:10
Opiate users	23 (66%)	29 (81%)	29 (76%)
Alcohol users	15 (43%)	18 (50%)	28 (74%)
Cannabis users	17 (49%)	18 (50%)	20 (53%)
Crack users	15 (43%)	22 (61%)	23 (61%)
Cocaine	2 (6%)	2 (6%)	3 (8%)
Amphetamine users	4 (11%)	1 (3%)	4 (11%)
Injecting drug users	13 (37%)	16 (44%)	19 (50%)
Opioid Substitute Medication users	25 (71%)	31 (86%)	24 (63%)
Psychiatric Medication users	17 (49%)	14 (39%)	17 (45%)

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless

3.6 Results

3.6.1 Drug dependency in different housing status groups.

One way ANOVA indicated that there was a significant effect of housing status on drug dependency, F (2,106) = 6.651, r= .33 and p < .01 as indicated in Fig 3.1.

Post hoc analysis using Bonferroni correction found that there was significant difference in drug dependency between homeless and stably housed groups only (p<.05), where homeless group had higher drug dependency than stably housed group (as indicated in Fig 3.1). There was no significant difference on drug dependency between unstably housed as compared to stably housed (p>.05) or homeless groups (p>.05). Table 3.2 represents the number of participants in each of the dependency categories. It can be seen that 45% of the homeless group scored in high dependency category, where unstably housed looked more similar to stably housed drug user.

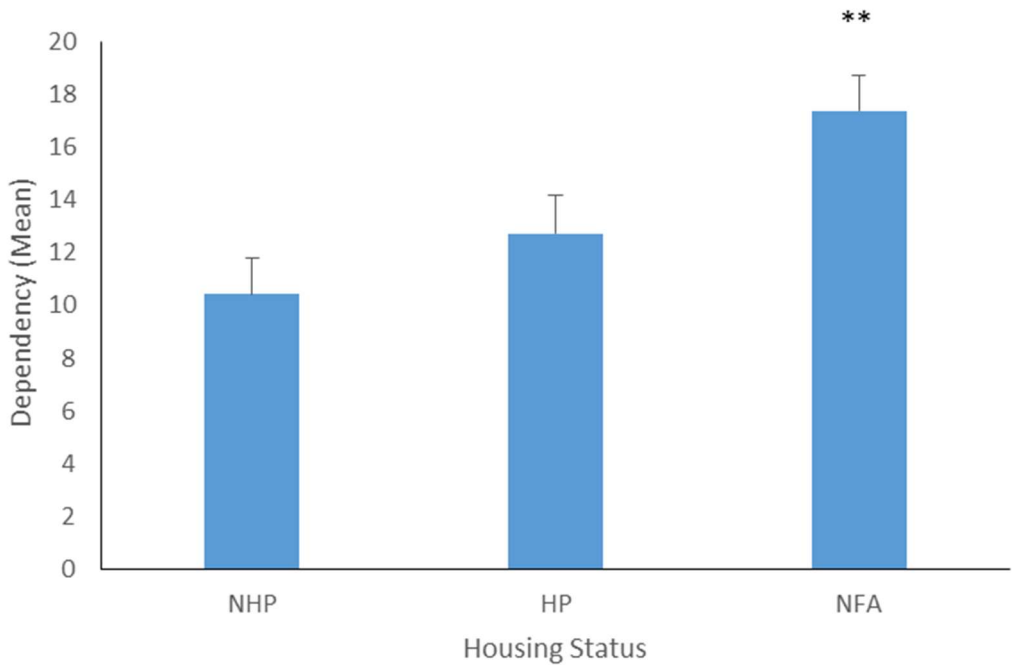

Figure 3.1: Mean of dependency in groups: No Housing Problem, Housing Problem and No Fixed Abode *p<0.05, **p<0.01, ***p<0.001 (Compared to NHP). Error bars represent standard errors.

Table 3.2: Drug dependency scores for housing groups

Categories	LDQ Scores	NHP	HP	NFA
No dependency	0	4(11%)	0	1(3%)
Low to moderate	0 - 10	15(43%)	18(50%)	7(18%)
Moderate to high dependence	11 - 20	12(35%)	10(28%)	13(34%)
High dependence	21 - 30	4(11%)	8(22%)	17(45%)
Total (N)		35	36	38

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless

A 3 by 3 Chi-square analysis was conducted to examine the relationship between housing status and reporting low, moderate or high dependency scores on the LDQ. The Chi-square test indicated that there was a significant association between housing status and reporting low, moderate or high dependency scores (where $\chi 2 = 13.581$, $df = 4$ and $p<.01$). Post hoc Chi-square analysis indicated that there was a significant relationship between homeless group and high ($p<.0055$) and low ($p<.0055$) dependency scores, after Bonferroni adjustment.

3.6.2 Composite drug scores in last 28 days in different housing groups.

As Levenes test was violated, a Kruskall-Wallis H test indicated that there were significant differences in the composite drug score between the drug users in the three housing groups, $H (2) = 7.06$, $p < .05$.

Post-hoc analysis using Mann-Whitney U tests indicated the composite drugs consumed by homeless drug users was significantly greater than the amount used by the stably housed ($U= 48$, $z= 2.098$, $r= - .25$ and $p< .05$) and unstably housed ($U= 46$, $z= -2.450$, $r = - 0.28$ and $p < .05$) drug users.

However, there was no significant difference in the composite drug score between stably and unstably housed ($U= 62$, $z= - .161$ and $p > .05$).

Table 3.3: Difference in composite drug scores between housing groups

	Housing status	N	Mean Rank	Sum of Ranks
Composite drug scores	Stably housed	35	49.9	1746.5
	Unstably housed	36	48.3	1738.8
	Homeless	38	65.9 *≠	2504.2

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.
*p<0.05 (Compared to NHP) and ≠ p<0.05 (Compared to HP).

3.6.3 Correlation between LDQ and Drug composite scores

Spearman's rank correlation was computed to assess the relationship between dependency and composite drug scores. The analysis indicated that there was a positive correlation between drug dependency and composite drug scores, r (107) =.217, p<.05.

3.6.4 Individual drug amount in the last 28 days in different housing status groups.

Alcohol

As Levenes test was violated, a Kruskall-Wallis H test was utilised which indicated that there was no significant difference in the amount of alcohol consumed in the last 28 days between the three housing groups, H (2) = 2.622, p < .05.

Opiates

One way ANOVA indicated that there was a significant effect of housing status on opiate amount, F (2, 78) = 6.010, p<.01.

Post hoc analysis using Bonferroni correction indicated that there was a significant difference between homeless and stably housed (p<.01) and homeless and unstably housed (p<.05), where homeless drug users indicated significantly greater opiate amounts as compared to housed groups as indicated in Fig.3.2. There was no significant difference between stably housed and unstably housed drug users (p>.05), see fig. 3.2

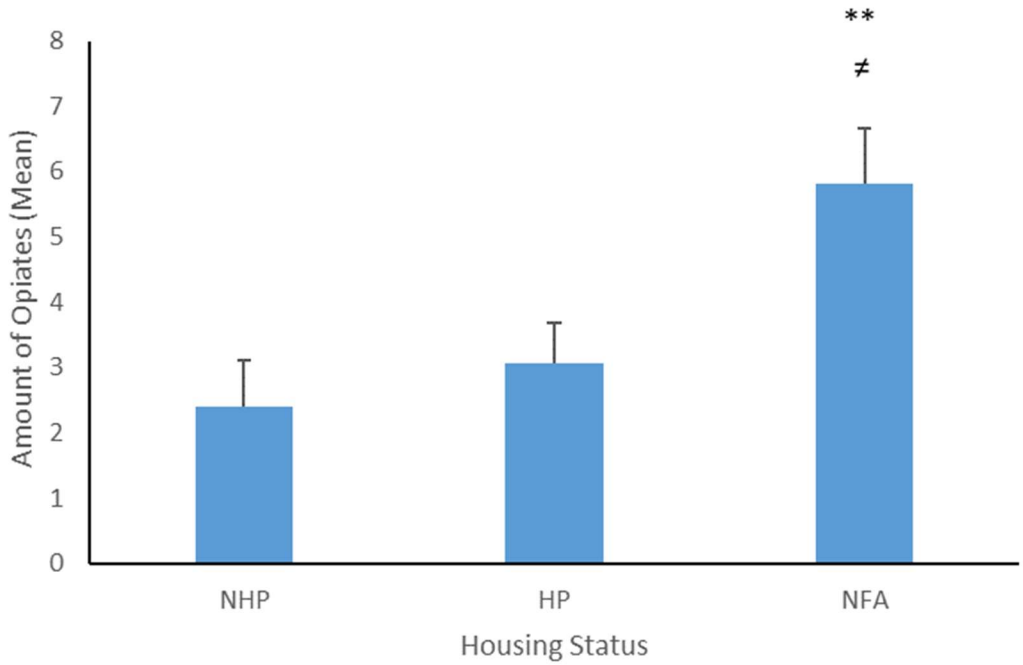

Figure 3.2: Mean of opiate amount in groups: No Housing Problem, Housing Problem and No Fixed Abode. *p<0.05 **p<.01 (Compared to NHP) and ≠ p<0.05 (Compared to HP). Error bars represent standard errors.

Cannabis

As Levenes test was violated, a Kruskall-Wallis H test was utilised which indicated that there was no significant difference in the total amount of cannabis used in the last 28 days used between the three housing status groups, H (2) = 1.617, p > .05.

Crack

As Levenes test was violated, a Kruskall-Wallis H test indicated that there was significant difference between the housing groups on total amount of crack consumed, H (2) = 6.394, p<.05.

Post hoc analysis using Mann-Whitney U test indicated that there was significant difference between homeless and stably housed groups only (where U=96.0, z=-2.293, r= -.37 and p<.05), where homeless groups used significantly more crack than the stably housed group. There was no significant difference between stably and unstably housed (where U= 141.0, z= -.746 and

p>.05) or unstably housed and homeless groups (where U= 170.0, z=-1.892 and p>.05), see table 3.4.

Stimulant

As Levenes test was violated, a Kruskall-Wallis H test was utilised which showed that there was significant difference in the total amount of stimulant use between the three housing groups, H (2) = 14.240, p < 0.001.

Post hoc analysis using Mann-Whitney U tests indicated that there was significant difference in the amount of stimulant used between homeless and stably housed (U=160.0, z= -2.970, r=-.42 and p<.01) and homeless and unstably housed (U=175.5, z=-3.375,r= -.46 and p<.001), where homeless drug users had significantly higher stimulant amount than housed groups. There was no significant difference in the amount of stimulant consumed between stably and unstably housed group (U= 260.5, z= -.044 and p>.05) as indicated in table 3.4 below.

Table 3.4: Difference in individual drug amounts between housing groups.

Total Drug Scores	Housing status	N	Mean Rank	Sum of Ranks
Alcohol	NHP	15	26.8	402.0
	HP	18	36.4	655.2
	NFA	28	29.8	834.4
Cannabis	NHP	17	29.2	496.4
	HP	18	23.5	423.0
	NFA	20	31.1	622.0
Crack	NHP	15	23.8	357.0
	HP	22	27.8	612.0
	NFA	23	37.4*	860.2
Stimulant	NHP	21	31.2	655.2
	HP	25	30.4	760.0
	NFA	30	50.3**≠≠≠	1509.0

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless. *p<0.05 **p<.01 (Compared to NHP) and ≠ p<0.05, ≠ ≠ p< 0.01 ≠ ≠ ≠p<.001 (Compared to HP)

3.6.5 Frequency of drug use in the last 28 days in different housing groups.

Alcohol

As Levenes test was violated, the Kruskall- Wallis H test was utilised which indicated that there was no significant difference between the three housing groups on frequency of alcohol use in the last 28 days, $H(2) = 3.131$, $p > .05$.

Opiates

One way ANOVA indicated that there is significant difference between the groups on frequency of opiate use, $F(2, 78) = 4.742$ and $p < 0.05$ as indicated in fig 3.3.

Post hoc analysis using Bonferroni correction revealed that there was a significant difference in the frequency of opiate use between homeless and stably housed groups ($p < .05$), where homeless group had greater frequency than stably housed group as indicated in fig. 3.3. There was no significant difference in frequency between unstably housed drug users as compared to stably or homeless drug users (where $p > .05$ in both comparisons).

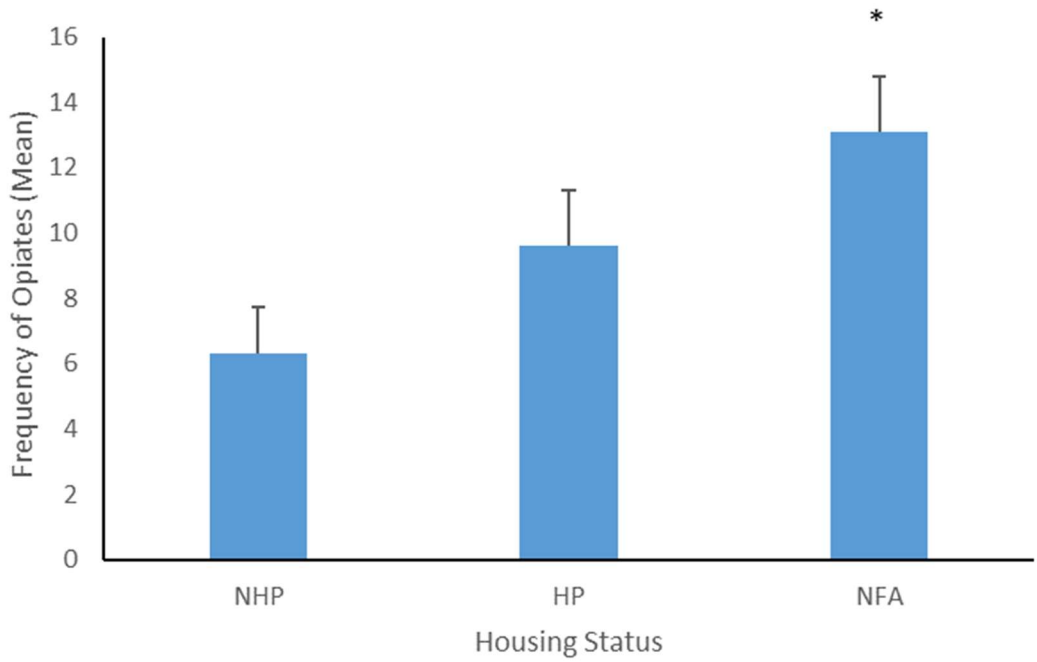

Figure 3.3: Mean frequency of opiate use within the last 28 days in groups: No Housing Problem, Housing Problem and No Fixed Abode. *p<0.05 (Compared to NHP). Error bars represent standard errors.

Cannabis

As Levenes test was violated, the Kruskall- Wallis H test was utilised which indicated that there was no significant difference between the three housing groups on frequency of cannabis use H (2) = 2.523, p > .05.

Crack

As Levenes test was violated, a Kruskall-Wallis H test was utilised which indicated that there was significant difference between the three housing groups on frequency of crack use H (2) = 6.931, p< .05.

Post hoc analysis using Mann Whitney U tests indicated that there was significant difference in frequency of crack use between homeless drug users and stably housed (U= 98.5, z= -2.238, r= -.36 and p< .05) and homeless drug users and unstably housed (U= 157.5, z= -2.193, r=-.33 and p< .05), where homeless group had significantly higher frequency of crack use as compared to both housed groups. There was no significant difference on frequency of

crack use between the stably housed as compared to unstably housed (where U=148.5, z= -.514 and p>.05) as indicated in table 3.5 below.

Stimulant

As Levenes test was violated, a Kruskall-Wallis H test was utilised which indicated there was significant difference between housing groups on frequency of stimulant use H(2)=8.589, p<.05 as shown in table 3.5.

Post hoc analysis using Mann-Whitney U test indicated that there was significant difference between homeless and stably housed (U=178.5, z= -2.633, r=-.37 and p<.01) and homeless and unstably housed (U=244, z=-2.230, r=-.30 and p<.05). Homeless groups indicated significantly greater frequency of stimulant use than both housed groups. There was no significant difference between stably and unstably housed drug users on frequency of stimulant use (U= 230, z= -.723 and p>.05) see table 3.5.

Table 3.5: Difference in frequency of alcohol, cannabis, crack and stimulant use.

Frequency of Drug	Housing status	N	Mean Rank	Sum of Ranks
Alcohol	NHP	15	24.7	370.5
	HP	18	35.6	641.0
	NFA	28	31.4	879.2
Cannabis	NHP	17	29.6	503.2
	HP	18	24.1	434.0
	NFA	20	30.1	602.0
Crack	NHP	15	24.5	367.5
	HP	22	27.0	594.0
	NFA	23	37.9*≠	872.0
Stimulant	NHP	21	30.4	638.4
	HP	25	34.5	862.5
	NFA	30	47.4**≠	1420.2

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.
*p<0.05 **p<.01 (Compared to NHP) and ≠ p<0.05 (Compared to HP).

3.6.6 Difference between housing groups based on the psychiatric medication.

Out of 109 participants in the sample, 48 (44%) were on psychiatric medication and 61 (56%) were not on psychiatric medication. Numbers in each group are presented in tables 3.6 to 3.12.

3.6.7 Drug dependency of housing groups based on the psychiatric medication

Independent t test comparing drug dependency for those on psychiatric medication vs those not on medication in each housing category indicated that there was no statistically significant difference within stably housed groups t (33) = -.559, p> .05, unstably housed groups where t (34) = -.346, p>.05, and homeless groups where t (36) = -1.473, p>.05.

Kruskall-Wallis H tests indicated that there was significant difference between the housing groups on drug dependency scores for both those on psychiatric medication, H (2) = 6.830, p<.05, and those not on psychiatric medication H (2) = 6.790, p< .05.

Post hoc analysis using Mann Whitney U tests for those on psychiatric medication indicated that there was significant difference in dependency scores between homeless and stably housed drug users only (where U=72.5, z= -2.483, r= -.43 and p< .05), where homeless group had significantly higher dependency scores as compared to stably housed group. There was no significant difference in dependency scores between the stably housed group as compared to unstably housed group (U=107.0, z= - .478 and p>.05) or unstably housed group as compared to homeless group (U=72.0, z= -1.868 and p>.05).

Post hoc analysis using Mann Whitney U tests for those not on psychiatric medication indicates that there was significant difference in dependency scores between stably housed and homeless drug users only (U= 100, z= -2.513, r= -.40 and p< .05), where homeless group had higher dependency scores as compared to stably housed group. There was no significant difference in dependency scores between the unstably housed group as

compared to stably housed group (U=163.0, z= - .954 and p>.05) or unstably housed group as compared to homeless groups (U= 160.0, z= -1.730 and p>.05 respectively).

Table 3.6: Difference in drug dependency scores based on psychiatric medication

Psychiatric Medication	Housing status	N	Mean Rank	Sum of Ranks
No Medication	NHP	18	24.11	434.0
	HP	22	29.36	646.0
	NFA	21	38.62*	811.0
On Medication	NHP	17	19.56	332.5
	HP	14	22.00	308.0
	NFA	17	31.50*	535.5

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.
*p<0.05 (Compared to NHP)

3.6.8 Composite drug score of housing groups based on their psychiatric medication.

Independent t test indicated that there was no statistically significant difference between those on psychiatric medication vs those not on medication within the stably housed groups where t (33) = .371, p> .05, unstably housed groups t (34) = 1.020, p> .05, and the homeless groups t (36) = .111, p> .05.

A Kruskall-Wallis H test was utilised which indicated that there was no significant difference between the three housing groups: stably housed, unstably housed and homeless on their composite drug scores for those on psychiatric medication H (2) = 5.672, p> .05 and those not on psychiatric medication H (2) = 2.220, p>.05.

Table 3.7: Difference in composite drug scores on basis of psychiatric medication.

Psychiatric Medication	Housing status	N	Mean Rank	Sum of Ranks
No Medication	NHP	18	28.03	504.5
	HP	22	29.00	638.0
	NFA	21	35.64	748.4
On Medication	NHP	17	22.71	386.1
	HP	14	19.14	267.9
	NFA	17	30.71	522.1

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless

3.6.9 Individual drug total amounts of housing groups based on their psychiatric medication.

Alcohol

Independent t test indicated that there was no significant difference on alcohol amount for those on psychiatric medication vs those not on medication in the stably housed t (13) = .126, p> .05 and the homeless group t (36) = .107, p> .05. As Levenes was violated, a Mann Whitney U test was utilised to compare differences in unstably housed for those on psychiatric medication vs those not on medication which indicated that there was a significant difference (U=68.0, z=2.676 and p<.01), where those on medication had significantly greater alcohol use than those not on medication.

A Kruskall-Wallis H test was utilised which indicated that there was significant difference between the three housing groups on amount of alcohol consumed for those on psychiatric medication, H (2) = 8.188, p<.05, but not for those who were not on psychiatric medication H (2) = .164, p>.05 as indicated in table 3.8 below.

Post hoc analysis using Mann Whitney U tests for those on psychiatric medication indicated that there was significant difference in amount of alcohol consumed between unstably housed group as compared to stably (U= 5.0, z= -2.030,r=-.59 and p<.05) or homeless groups (U= 10.50, z=-2.665,r=-.61 and p<.01), where unstably housed group had significantly higher alcohol amount

as compared to both stably or homeless groups as indicated in table 3.8. There was no significant difference between the homeless and stably housed groups on amount of alcohol consumed (where U= 21.5, z= -.897 and p>.05).

Table 3.8: Difference in alcohol amount on basis of psychiatric medication.

Psychiatric Medication	Housing status	N	Mean Rank	Sum of Ranks
No Medication	NHP	10	18.85	188.5
	HP	11	6.82	75.0
	NFA	16	19.75	316.0
On Medication	NHP	5	8.30 ≠ ≠	41.5
	HP	7	13.71	95.97
	NFA	12	10.58 ≠	127.0

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless≠ p<0.05, ≠ ≠ p< 0.01 (Compared to HP)

Opiates

Independent t test indicated that there was no significant difference in the amount of opiates used between the groups on psychiatric medication vs those not on medication in the stably housed groups t (21) = -1.453, p> .05, unstably housed groups t (27) = .292, p> .05, and the homeless groups t (27) = .499, p> .05.

A Kruskall-Wallis H test was utilised which indicated that there no significant difference between the three housing groups on opiate amount for those on psychiatric medication, H (2) = 2.563, p>.05, but there was significant difference for those who were not on psychiatric medication H (2) = 14.687, p< .001.

Post hoc Mann-Whitney U test for the drug users not on medication indicated that there was a significant difference in the amount of opiate use between the stably housed and homeless drug users (U= 15.0, z= -3.767, r=-.71 and p<.001) and unstably housed and homeless drug users (U= 65.0, z= -2.380, r=-.42 and p<.05), where homeless group had significantly higher opiate amounts as compared to housed group. There was no significant difference between the unstably housed group as compared to stably housed group (where U= 64.5, z= -1.468 and p>.05) as indicated in table 3.9 below.

Table 3.9: Difference in opiate amount on basis of psychiatric medication

Psychiatric Medication	Housing status	N	Mean Rank	Sum of Ranks
No Medication	NHP	12	13.13	157.5
	HP	16	20.53	328.4
	NFA	16	31.50***≠	504.0
On Medication	NHP	11	17.73	195.0
	HP	13	16.31	212.0
	NFA	13	22.77	295.1

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless. *p<.05, **p<0.01 and ***p<.001 compared to NFA. ≠ p<0.05 (Compared to HP)

Cannabis

Independent t test indicated that there was no significant difference in the amount of cannabis used between the housing groups for those on psychiatric medication as compared to those not on medication in the stably housed groups where t (15) = .239, p> .05, unstably housed groups t (16) = .345, p> .05, and the homeless groups t (18) = .906, p> .05.

A Kruskall-Wallis H test indicated that there no significant difference between the three housing groups on amount of cannabis used for those on psychiatric medication, H (2) = 1.617, p>.05 and those who were not on psychiatric medication H (2) = .844, p>.05 as indicated in table 3.10.

Table 3.10: Difference in cannabis amount on basis of psychiatric medication

Psychiatric Medication	Housing status	N	Mean Rank	Sum of Ranks
No Medication	NHP	9	17.78	160.0
	HP	13	14.46	188.0
	NFA	11	19.36	213.0
On Medication	NHP	8	11.94	95.5
	HP	5	9.20	46.0
	NFA	9	12.39	111.5

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless

Crack

Independent t test indicated that there was no significant difference in the amount of crack for those on psychiatric medication vs those not on medication

in the stably housed groups where t (13) = -1.088, p> .05, unstably housed groups t (20) = .159, p> .05, and the homeless groups t (21) = -1.006, p> .05.

A Kruskall-Wallis H test indicated that there no significant difference between the three housing groups on amount of crack use for those on psychiatric medication, H (2) = 2.538, p>.05 and those who were not on psychiatric medication H (2) = 3.337, p>.05 as indicated in table 3.11.

Table 3.11: Difference in crack amount on basis of psychiatric medication.

Psychiatric Medication	Housing status	N	Mean Rank	Sum of Ranks
No Medication	NHP	8	11.25	90.0
	HP	12	15.33	184.0
	NFA	12	21.17	254.0
On Medication	NHP	7	13.36	93.5
	HP	10	12.65	126.5
	NFA	11	16.91	186.0

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless

Stimulant

Independent t test indicated that there was no significant difference between those on psychiatric medication vs those not on medication in the stably housed groups where t (17) = .811, p> .05, unstably housed groups t (21) = .836, p> .05, and the homeless groups t (24) = -.646, p> .05.

A Kruskall-Wallis H test was utilised which indicated that there was no significant difference for those who were on psychiatric medication H (2) = 4.542, p> .05 , but there was significant difference between the three housing groups those not on psychiatric medication, H (2) = 6.003, p<.05.

Post hoc analysis using Mann Whitney U tests for those not on psychiatric medication indicated that there was significant difference in amount of stimulant use between homeless as compared to stably housed (U= 18.0, z= -2.322, r =-.46 and p<.05) group only, where homeless group had higher stimulant amount as compared to stably housed groups as indicated in table 3.12. There was no significant difference between the unstably and stably housed groups (where U= 38.0, z= -.733 and p>.05) or unstably housed and

homeless (where U= 42.5, z=-1.706 and p>.05) on amount of stimulant consumed.

Table 3.12: Difference in total stimulant amount on basis of psychiatric medication.

Psychiatric Medication	Housing status	N	Mean Rank	Sum of Ranks
No Medication	NHP	11	16.77	184.4
	HP	15	17.80	267.0
	NFA	15	27.30*	409.5
On Medication	NHP	10	14.65	146.5
	HP	10	12.70	127.0
	NFA	15	23.77	356.5

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.
*p<0.05 (compared to NHP)

3.6.10 Frequency in drug use of housing groups based on the psychiatric medication.

Alcohol

Independent t-tests indicated there was no statistically significant difference in stably housed t (13) = .197, p> .05 and homeless groups where t (26) = 1.509, p>.05 for those on medication as compared to those not on medication. As Levenes was violated a Mann Whitney U test was utilised for unstably housed group which indicated significant difference in the unstably housed group (U=61.0,z= 2.104 and p<.05), where those on medication had significantly greater frequency of alcohol than those not on medication.

A Kruskall-Wallis H test indicated significant difference between the three housing groups on the frequency of alcohol use for those on psychiatric medication, H (2) = 6.830, p<.05 and but not for those who were not on psychiatric medication H (2) = 2.717, p>.05 as indicated in table 3.21.

Post hoc analysis using Mann-Whitney U tests for those on medication indicated that that there was significant difference in frequency of alcohol use between unstably housed and stably housed (U= 5.00, z= -2.176, r=-.63 and p< .05) and unstably housed and homeless drug users (U= 14.5, z= -2.387,-.55 and p< .05), where unstably housed indicated significantly higher

frequency of alcohol use as compared to both homeless and stably housed drug users. There was no significant different between homeless and unstably housed on frequency of alcohol use (U= 27.0, z= -.320 and p> .05).

Opiates

Independent t test comparing those on psychiatric medication vs those not on medication indicated that there was no statistically significant difference in opiate frequency in stably housed groups t (21) = -1.452, p> .05, unstably housed groups where t (27) = .292, p>.05, and homeless groups where t (27) = .499, p>.05.

A Kruskall-Wallis H test indicated that there was no significant difference between the housing groups on frequency of opiate use for those on psychiatric medication, H (2) = 1.534, p>.05, but there was significant difference for those who were not on psychiatric medication H (2) = 10.908, p< .01.

Post hoc analysis for those not on psychiatric medication using Mann Whitney U tests indicated that there was significant difference in frequency of opiate use between stably housed and homeless drug users only (U= 23.5, z= -3.382, r=-.64 and p< .001), where homeless group had higher frequency of opiate use as compared to stably housed group (see table 3.13). There was no significant difference between the unstably housed group as compared to stably housed or homeless groups (where U= 67.5, z= -1.331 and p>.05 and U= 80.0, z= -1.823 and p>.05 respectively).

Cannabis

Independent t test comparing those on psychiatric medication vs those not on medication indicated that there was no statistically significant difference in stably housed groups t (15) = .264, p> .05, unstably housed groups where t (16) = -.306, p>.05, and homeless groups where t (18) = .915, p>.05.

A Kruskall-Wallis H test indicated that there no significant difference between the three housing groups on the frequency of cannabis used in the last 28 days for those on psychiatric medication, H (2) = .166, p>.05 and those who were not on psychiatric medication H (2) = 2.523, p>.05.

Crack

Independent t test comparing those on psychiatric medication vs those not on medication indicated that there was no statistically significant difference in stably housed groups t (13) = -.755, p> .05, unstably housed groups where t (20) = -.115, p>.05, and homeless groups where t (21) = -.536, p>.05.

A Kruskall-Wallis H test indicated that there no significant difference between the three housing groups on the frequency of crack use in the last 28 days for those on psychiatric medication, H (2) = 3.419, p>.05 and those who were not on psychiatric medication H (2) = 2.731, p>.05.

Stimulant

Independent t test comparing those on psychiatric medication vs those not on medication indicated that there was no statistically significant difference in stably housed groups t (19) = .608, p> .05, unstably housed groups where t (23) = .203, p>.05, and homeless groups where t (28) = -.424, p>.05.

A Kruskall-Wallis H test indicated that there was no significant difference between the housing groups on frequency of stimulant use for those on psychiatric medication, H (2) = 4.475, p<.05 and those who were not on psychiatric medication H (2) = 4.146, p> .05 as indicated in table 3.13.

Table 3.13: Difference in frequency of drug use on basis of psychiatric medication

Drug	Psychiatric Medication	Housing status	N	Mean Rank	Sum of Ranks
Alcohol	No Medication	NHP	10	15.75	157.5
		HP	11	7.45	82.0
		NFA	16	22.28	356.4
	On Medication	NHP	5	9.40 ‡	47.0
		HP	7	12.71	89.0
		NFA	12	10.46 ‡	125.5
Opiates	No Medication	NHP	12	14.08	169.0
		HP	16	21.08	337.3
		NFA	16	30.03***	480.5
	On Medication	NHP	11	17.64	194.0
		HP	13	17.19	223.4
		NFA	13	21.96	285.5
Cannabis	No Medication	NHP	9	18.39	165.5
		HP	13	13.85	180.0
		NFA	11	19.59	215.5
	On Medication	NHP	8	12.06	96.5
		HP	5	10.60	53.0
		NFA	9	11.50	103.5
Crack	No Medication	NHP	8	12.25	98.0
		HP	12	15.00	180.0
		NFA	12	20.83	250.0
	On Medication	NHP	7	12.86	90.0
		HP	10	12.20	122.0
		NFA	11	17.64	194.0
Stimulant	No Medication	NHP	11	16.05	176.5
		HP	15	20.10	301.5
		NFA	15	25.53	383.0
	On Medication	NHP	10	14.80	148.0
		HP	10	14.95	149.5
		NFA	15	22.17	332.5

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.
.*p<0.05, **p<0.01, *** p<.001 compared to NHP. ‡ p<.05 (compared to HP).

3.6.11 Difference between housing status groups based on their Opiate substitute treatment (OST) medication.

Out of 109 participants, 80 (73%) were on OST medication and 29 (27%) were not on OST medication. The 29 participants when divided in 6 sub-groups yielded a very small sample. Owing to the small sample size, those not on OST were excluded from the analysis for this study.

3.6.12 Drug dependency of housing groups based on OST medication.

A Kruskall-Wallis H test indicated that there was significant difference between the three housing groups on dependency scores for drug users who were on OST medication ($H(2) = 10.215$, $p < .05$).

Post hoc analysis using Mann Whitney U tests for those on OST medication indicated that there was significant difference between homeless and stably housed drug users (where $U= 148.50$, $z= -3.035$, $r=-.43$ and $p <.01$) and homeless and unstably housed drug users, ($U= 235.0$, $z= -2.328$, $r= -.31$ and $p <.01$). Homeless drug users on OST had significantly higher dependency scores than stably or unstably housed drug users. There was no significant difference between stably and unstably housed drug users (where $U=323$, $z = -1.166$ and $p>.05$).

Table 3.14: Difference in drug dependency on basis of OST medication.

Opiate substitute Medication	Housing status	N	Mean Rank	Sum of Ranks
On Medication	NHP	25	31.86	796.5
	HP	31	38.16	1183.0
	NFA	24	52.52**‡ ‡	1260.4

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless. *p<0.05, **p<0.01 compared to NHP. ‡ p<.05 ‡ ‡ p<.01 compared to HP.

3.6.13 Composite drug scores of housing groups based on the OST medication

A Kruskall-Wallis H test indicated that the three housing groups differed significantly on composite drug scores for those who were on OST medication, $H(2) = 8.027$, $p <.05$.

Post hoc tests for those on OST medication indicated that there was significant difference between homeless and stably housed (U = 160.5, z= -2.791,r= -.40 and p<.01) and homeless and unstably housed (U = 255.0, z= -1.986, r= -.27 and p<.05), where homeless drug users had significantly higher composite drug scores than both stably or unstably housed drug users. There was no significant difference between stably housed and unstably housed (U=336.5, z= -.617 and p>.05).

Table 3.15: Difference in composite drug scores on basis of OST medication.

Opiate substitute Medication	Housing status	N	Mean Rank	Sum of Ranks
On Medication	NHP	25	32.88	822.0
	HP	31	38.37	1189.4
	NFA	24	51.19**‡	1228.5

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless. *p<0.05, **p<0.01 compared to NHP. ‡ p<.05 ‡ ‡ p<.01 compared to HP.

3.6.14 Individual drug total amount in housing groups based on the OST medication.

Alcohol

A Kruskall-Wallis H test was utilised which indicated that there no significant difference between the three housing groups for those on OST medication, H (2) = 2.782, p>.05 as indicated in table 3.16 below.

Table 3.16: Difference in alcohol amount on basis of OST medication.

Opiate substitute Medication	Housing status	N	Mean Rank	Sum of Ranks
On Medication	NHP	11	8.64	95.0
	HP	17	9.76	166.0
	NFA	19	13.42	255.0

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless

Opiate

A Kruskall-Wallis H test was utilised which indicated that there was significant difference between the housing groups for those on OST medication H (2) = 15.835, p <.001.

Post hoc Mann Whitney U tests for those on OST medication indicated that there was significant difference between homeless and both stably or unstably housed, (U = 59.0, z= -3.821, r=-.60 and p<.001 and U = 126.0, z = -2.977, r=-.44 and p<.01 respectively), where homeless drug users consumed significantly higher opiate as compared to both categories of housed drug users. There was no significant difference between stably housed and unstably housed drug users (U=216.0, z=-.980 and p>.05) as indicated in table 3.17.

Table 3.17: Difference in opiate amount on basis of OST medication.

Opiate substitute Medication	Housing status	N	Mean Rank	Sum of Ranks
On Medication	NHP	20	24.25	485.0
	HP	26	30.04	781.0
	NFA	20	47.25***‡ ‡	945.0

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.
*p<0.05, **p<0.01 *** p<.001 as compared to NHP. ‡ p<.05 ‡ ‡ p<.01 compared to HP.

Cannabis

A Kruskall-Wallis H test indicated that there no significant difference between the three housing groups on amount of cannabis used for those on OST medication, H (2) = .967, p>.05 as indicated in table 3.18.

Table 3.18: Difference in cannabis amount on basis of OST medication.

Opiate substitute Medication	Housing status	N	Mean Rank	Sum of Ranks
On Medication	NHP	11	17.91	197.0
	HP	15	17.83	267.4
	NFA	11	21.68	238.4

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless

Crack

A Kruskall-Wallis H test indicated that there was significant difference between the three housing groups on amount of crack use for those on OST medication, H (2) = 9.215, p<.05.

Post hoc Mann Whitney U tests for those on OST medication indicated that there was significant difference between the homeless and stably housed, (U = 40.5, z= -2.794, r= -.52 and p <.01) and homeless and unstably housed (U = 88.0, z= -2.302, z= -.38 and p <.01), where homeless drug users had significantly higher amount of crack use as compared to housed drug users. There was no significant difference between stably and unstably housed drug users (U= 104.0, z= -.964 and p>.05) as indicated in table 3.19.

Table 3.19: Difference in crack amount on basis of OST medication.

Opiate substitute Medication	Housing status	N	Mean Rank	Sum of Ranks
On Medication	NHP	13	18.12	235.5
	HP	20	22.70	454.0
	NFA	16	33.47**‡ ‡	535.5

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless. *p<0.05, **p<0.01 compared to NHP. ‡ p<.05 ‡ ‡ p<.01 compared to HP.

Stimulant

A Kruskall-Wallis H test indicated that there was significant difference between the three housing groups on stimulant use for those on OST medication, H (2) = 13.739, p<.05.

Post hoc Mann Whitney U tests for those on OST medication indicated that there was significant difference between homeless and both stably or unstably housed, (U = 56.0, z= -3.351, r=-.56 and p <.001 and U = 99.0, z = -3.024, r=-.47 and p< .01 respectively), where homeless drug users had significantly higher stimulant use as compared to housed drug users. There was no significant difference between stably and unstably housed drug users, (U= 173.0, z=-.618 and p>.05).

Table 3.20: Difference in stimulant amount on basis of OST medication.

Opiate substitute Medication	Housing status	N	Mean Rank	Sum of Ranks
On Medication	NHP	17	22.47	382.0
	HP	23	25.78**	593.0
	NFA	19	41.84***‡ ‡	795.0

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless. *p<0.05, **p<0.01*** p<.001 (compared to NHP). ‡ p<.05 ‡ ‡ p<.01 (compared to HP).

3.6.15 Frequency of drug use in housing groups based on the OST medication.

Alcohol

A Kruskall-Wallis H test indicated that there no significant difference between the three housing groups on the frequency of alcohol use for those on OST medication, H (2) = 2.612, p>.05.

Opiates

A Kruskall-Wallis H test indicated that there was significant difference between the three housing groups on the frequency of opiate use for those on OST medication, H (2) = 14.826, p<.01

Post hoc Mann Whitney U tests for those on OST medication indicated that there was significant difference between the homeless and stably or unstably housed groups (U = 61.0, z= -3.775, r=-.60 and p <.001 and U= 140.0, z= -2.673, r=-.39 and p<.01 respectively), where homeless drug users had significantly higher opiate frequency as compared to housed drug users. There was no significant difference between stably and unstably housed drug users (where U=203.5, z= -1.259, p>.05) as indicated in table 3.21.

Cannabis

A Kruskall-Wallis H test indicated that there no significant difference between the three housing groups on the frequency of cannabis use for those on OST medication, H (2) = .903, p>.05.

Crack

A Kruskall-Wallis H test indicated that there was significant difference between the housing groups on the frequency of crack use for those on OST medication, H (2) = 9.317, p<.01.

Post hoc Mann Whitney U tests for those on OST medication indicated that there was significant difference between the homeless and both stably or unstably housed, (U = 40.5, z= -2.809, r=-.52 and p <.01 and U= 87.5, z= -2.327, r=-.39 and p<.01 respectively), where homeless drug users had higher crack frequency as compared to housed drug users. There was no significant

difference between stably and unstably housed drug users on the frequency of crack use (where U=104.0, z= -964, p>.05) as indicated in table 3.21.

Stimulant

A Kruskall-Wallis H test indicated that there was significant difference between the housing groups on the frequency of stimulant use for those on OST medication, H (2) = 11.915, p<.01.

Post hoc Mann Whitney U tests for those on OST medication indicated that there was significant difference between the homeless and stably housed drug users (U = 56.5, z= -3.352, r=-.56 and p <.001) and homeless and unstably housed drug users (U = 134.5, z= -2.134, r=-.33 and p <.05) where homeless drug users had significantly higher frequency of stimulant use as compared to housed drug users. There was no significant difference between stably and unstably housed drug users (where U= 137.0, z= -1.615, p>.05).

Table 3.21: Difference in frequency of drug use on basis of OST medication

Drug	OST Medication	Housing status	N	Mean Rank	Sum of Ranks
Alcohol	On Medication	NHP	11	20.45	225.0
		HP	17	28.15	478.5
		NFA	19	22.34	424.4
Opiates	On Medication	NHP	20	23.73	475.0
		HP	26	31.06	807.5
		NFA	20	46.45***‡ ‡	929.0
Cannabis	On Medication	NHP	11	18.18	200.0
		HP	15	17.73	266.0
		NFA	11	21.55	237.0
Crack	On Medication	NHP	13	18.12	235.5
		HP	20	17.73	355.0
		NFA	16	33.50**‡ ‡	536.0
Stimulant	On Medication	NHP	17	20.38	346.4
		HP	23	28.89	664.4
		NFA	19	39.95***‡	759.0

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.
*p<0.05, **p<0.01 and ***p<0.001 compared to NHP. ‡ p<.05 ‡ ‡ p<.01 (compared to HP).

3.7 Discussion

The purpose of this study was to investigate if there was a difference in drug use behaviour between stably housed, unstably housed and homeless drug users. The results indicated that the homeless drug users had significantly higher drug dependency levels than the stably housed drug users, and that homeless drug users reported significantly higher composite drug scores compared to both stably and unstably housed drug users. The results also indicated a positive relationship between drug dependency and drug composite scores, where increase in one was indicative of increase in the other.

When comparing the use of specific drugs by the different housing groups an interesting pattern of results emerged. There were no significant differences in the amount or frequency either alcohol or cannabis use; however, there were significant group differences in the use of opiates, crack and stimulants where stimulants included cocaine, crack and amphetamine, which are pharmacologically similar drugs. More specifically, homeless drug users used significantly more opiates in the previous 28 days than both the stably and unstably housed drug users and used opiates significantly more frequently than the stably housed drug users. In comparison to both the stably and unstably housed groups, homeless drug users had significantly higher amount and frequency of stimulant use. When comparing the use of crack, homeless drug users consumed significantly more crack than the stably housed drug users, at significantly higher frequently than both the stably and unstably housed drug users. These data significantly add to our knowledge of the different patterns of drug use by drug users who have different levels of housing problems, and this will be discussed below.

The current study also sought to identify if the prescribing of OST or psychiatric medication was associated with any differences in the drug using behaviour between the three housing groups. The results indicated that when comparing the levels of drug dependency in users who were either on, or not on psychiatric medication similar results were obtained with homeless drug users

reporting significantly higher levels of drug dependency than stably housed drug users. When comparing specific drug use of those on, and those users not on psychiatric medication within each housing group there was very little significant difference in the patterns of drug use. The exception to this was found in the analysis of alcohol use, where unstably housed drug users prescribed psychiatric medication consumed significantly more alcohol at significantly greater frequency than the unstably housed drug users who were not prescribed psychiatric medication. When comparing the use of specific drugs across the different housing group of those either on or those not on, psychiatric medication an interesting pattern of results emerged. In particular, there was no significant difference in the amount or frequency of drug use between the different housing groups for those users who were being prescribed psychiatric medication. Once again, the only exception to this was alcohol use, with unstably housed drug users were consuming significantly greater amount and frequency of alcohol as compared to homeless and stably housed drug users. This finding is also considered anomalous and was based on very small numbers in the samples compared. Comparison of drug use across the different housing groups for users who were not being prescribed psychiatric medication revealed that homeless users consumed significantly more opiates and stimulants than both the unstably and stably housed user and consumed opiates more frequently than the stably housed users. However, there were no significant difference in the patterns of use of cannabis or crack by drug users who were not being prescribed psychiatric medication.

Owing to the sample size, it was not possible to compare housing groups on OST with those not on OST. However, comparison between housing groups for those who were prescribed OST medication (73% of the sample), indicated that homeless drug users had significantly higher drug dependency levels and composite drug scores as compared to both stably and unstably housed drug users. When comparing specific drug use, homeless drug users on OST reported significantly higher frequency and amount of opiate, crack and stimulant use as compared to both stably and unstably housed drug users.

There was no significant difference in the patterns of alcohol and cannabis use between the three housing groups.

3.7.1 Dependency and drug use

The results of the current study indicated that homeless drug users had significantly higher drug dependency than stably housed drug user but not unstably housed drug users. However, the levels of dependency reported by the unstably housed drug users is in-between those of the homeless and stably housed drug users. This is evidenced by the percentage of drug users in each housing group (table 3.2) where scores of 21 or over were indicative of high dependency (Paton-Simpson and MacKinnon, 1999). The results indicated that 45% of individuals in the homeless category reported high dependency as compared to 22% in the unstably housed categories and 11% in the stably housed groups, overall, the unstably housed group looked more similar to the stably housed group on dependency measure.

In the current study drug dependency was measured by the LDQ, which although primarily focussed on the psychological aspects of addiction also encapsulates the physiological phenomena of addiction such as tolerance and withdrawal (Raistrict et al., 1994), providing a more holistic perspective of dependency. Furthermore, the results of the current study indicated that the composite drug score reported by the homeless drug users was significantly higher than from both the stably and unstably housed drug users. Although there is very little directly comparable research from UK samples, the data from the current study is broadly similar to related research in other countries.

Prevalence studies in the UK (Fountain et al., 2003) have suggested high rates of dependency among homeless drug users where nearly 83% of the sample was dependent on the primary substance of abuse; however, the study did not compare these findings to dependency among drug users in non-homeless settings. Studies from the USA (Krupski et al., 2015) that compared homeless and housed drug users indicated similar findings to the current study where the homeless drug users had higher drug use severity than the housed drug users. Interestingly, another study in the USA by Eyrich-garg et al. (2008)

revealed similarities between the homeless and marginally housed group (similar to the current unstably housed group) on drug problems. Their study compared four groups of drug users, the literally homeless, marginally homeless, housed poor and housed not poor (classified on the basis of income). The study's finding revealed that the literally homeless and marginally housed experienced the most severe drug problems, followed by the two groups of housed poor and not poor. Additionally, the study indicated similarities between the literally homeless and marginally housed groups in their drug use. The results by Eyrich-garg et al. (2008) is broadly similar to the current results with the homeless group reporting the highest levels of dependency and the highest composite drug scores. However, the current results suggest that the unstably housed group exhibits greater similarity to the stably housed group in terms of drug dependency and composite drug use scores.

Severity of drug use is conceptualised as the degree to which an individual engages in maladaptive compulsive drug-seeking and drug-using behaviour (Conway et al., 2006) and can be indicative of dependence. The limited studies that have compared severity of drug use in individuals in different housing circumstances (Eyrich-garg et al., 2008; Krupski et al., 2015) indicated that homeless drug users had greater drug severity than housed drug users. However, both studies mentioned above evaluated severity solely by frequency of substance use rather than taking into account both amount and frequency. Assessing the quantity of drug consumed provides a more comprehensive understanding of drug use, as it can be indicative of tolerance levels, severity of dependence and potentially the duration of use. Individuals with higher levels of dependence may indicate a different treatment plan as compared to those with lower levels of dependence.

A more detailed investigation of the data revealed significant differences in drug use between the housing groups, where the homeless drug users consumed significantly higher amount of opiates and stimulants as compared to both unstably and stably housed drug users. The findings could be supportive of the self-medication hypothesis as discussed further in Ch.6, where homeless drug users used more drugs as a means to self-medicate in

the face of adversity. In terms of frequency, the homeless group reported significantly higher frequency of stimulant use as compared to both the stably and unstably housed groups, but significantly higher frequency of opiates only as compared to stably housed drug users. The results of the current study are contradictory to Eyrich-garg et al. (2008), where their study indicated that economically poorer, housed drug users indicated higher frequency of heroin use as compared to homeless drug users. Conversely, Doran et al. (2018) found that homeless drug users indicated a greater problem with heroin as compared to housed drug users, which is more aligned with the commonly reported problem substances among homeless individuals. To elaborate, previous studies suggest that both opiates and stimulants are among the top three drug categories to be initiated during periods of homelessness (Fountain et al., 2003), and are strongly predictive of the inability to obtain and maintain permanent housing (Fischer et al., 2006; Orwin et al., 2005).

Interestingly, it was observed that limited studies that have compared housing groups have either not focussed on stimulants category owing to low number of participants in amphetamine category (Eyrich-garg et al., 2008) or focused on methamphetamine which is a popular drug in the USA but not in the UK. One study (Krupski et al., 2015) that utilised a similar category to the current study (i.e., crack, cocaine and amphetamine) suggested that homeless drug users had a greater likelihood of using stimulants as compared to non-homeless drug users but the study does not elaborate on why homeless may be drawn to stimulants. Previous research indicates that homeless drug users have a preference for crack-cocaine (stimulant use) and that, this preference strongly contributes to sustaining the homeless circumstances (Fischer et al., 2006) with greater severity and higher frequency of use (Fountain et al., 2003). The current study adds new knowledge by indicating that having housing of some sort (i.e., unstable housing) was significantly associated with lower amount and frequency of stimulant consumption.

Within the category of stimulants, crack has been observed as a popular drug of choice among homeless populations in the USA (Doran et al., 2018). The results of the current study indicated that homeless drug users consumed crack significantly more frequently than both stably and unstably housed drug

users, and significantly higher amounts of crack as compared to stably housed drug users only. In terms of frequency, the results are contradictory to those by Eyrich-garg et al. (2008) where they found no difference in the frequency of cocaine use between the homeless and marginally housed (similar to unstably housed catergory). However, the results of the current study concur with Eyrich-garg et al. (2008) where they found that homeless consumed significantly higher frequency of cocaine as compared to both housed poor and not poor groups. Although their study only assessed cocaine, there is a high probability that crack being a derivative of cocaine was assessed within the category of cocaine.

Moreover, the Eyrich-garg et al. (2008) study did not explore differences in amount, whereas the current study offers new learning on variance in both amount and frequency of crack-cocaine based on housing conditions. The risk of harm from a substance can be influenced by both frequency and quantity of use. For example, an individual who injects 0.4gms of crack twice a week will differ from an individual who injects 1gm twice a week, despite reporting the same frequency of drug use. Additional information on the quantity of use provides a wider understanding of both level of dependency and the associated risk.

Importantly, homeless individuals who use both crack and heroin are at a higher risk of harm than those that use heroin on its own (Black, 2020). Fischer et al. (2006) highlighted that among a cohort of opiate users, the preference for crack was linked with greater involvement with risk and illegal activities as compared to non-crack users, suggesting that crack users were among the ‘marginalised of the marginalised’ among street drug users. It is noteworthy that individuals who use heroin and crack together (known as ‘speed balling’) tend to use the drugs more often with higher chances of risk behaviour (Fountain et al., 2003; Public Health England, 2020), such as preferring to inject the substances over smoking them.

Drug use among homeless individuals is also indicative of greater tendency to inject the drugs. A previous study among homeless individuals in London (Fountain et al., 2003) reported that 40% of the homeless drug users identified

as being injecting drug users. The results of the current study found that 50% of individuals in the homeless category were injecting drugs, as compared to 44% in unstably housed and 37% in the stably housed category as presented in table 3.1 (p.85). This possibly suggests that injecting drugs continues to be a significant concern among homeless drug users in the UK, despite improvements in the way harm reduction is delivered. Interestingly, none of the participants in the current study, in any of the housing categories reported sharing of needles or drug related paraphernalia. This is contrary to the findings by Topp et al. (2013) where there was higher rates of risk behaviour among homeless injecting drug users. A possible explanation for the findings of the current study could be that the participants were not engaging in risk behaviour owing to the extensive harm reduction advice provided or that they chose to not disclose risk behaviour.

US and Australian studies suggest that the continued use of illicit substances interferes with the attainment of stable housing (Tsai et al., 2014; Johnson & Chamberlain, 2008), where higher drug use and greater severity of use maintains the homelessness (Eyrich-garg et al., 2008; Neale, 2001). Thus, deterring individuals from accessing treatment to address the addiction problem, possibly maintaining the vicious cycle of drug use and homelessness. The findings from the current study suggest that homeless drug users in the UK are significantly disadvantaged whether it is owing to poor choices in drug use behaviour or whether it's a coping strategy to survive and endure their homeless living situation. This desperately highlights the need for effective interventions that take into account the housing circumstances of drug users.

The findings of the current study indicated no significant difference in alcohol consumption among the three housing groups, contradictory to previous studies (Eyrich-garg et al., 2008; Huntley, 2015), where alcohol was significantly more popular among homeless drug users most likely owing to its legal status, low cost and ease of availability. It is possible that this result could also be indicative of the fact that only primary illicit drug users were recruited into the current study, so the results are best interpreted with caution. Alcohol could be an ongoing problem within the homeless population and

treatment intervention should remain cautious about the risks involved with mixing alcohol with illegal drugs. The results of the current study indicated that cannabis was the only illegal drug that indicated no significant difference between the three housing groups. This aligns with findings from previous US studies (Eyrich-garg et al., 2008), where cannabis use was similar in different housing categories of drug users. Interestingly, where Eyrich-garg et al. (2008) only assessed frequency of use as a point of comparison, the current study found no significant differences in amounts as well as frequency of use, offering a broader understanding of drug use behaviour.

3.7.2 Psychiatric medication

Previous studies suggest that 70% of drug users accessing treatment present with anxiety and depression (Delgadillo et al., 2011; Public Health England 2020), where a large proportion of drug users in primary care services have been prescribed psychiatric medication at some point of time (Krupski et al., 2015). Whilst the main focus of psychiatric medication is to improve psychiatric symptoms, there has been significant interest in establishing the effect of psychiatric medication on substance use is based on the premise set by the self-medication hypothesis (Khantzian, 1986), where depressed individuals who were self-medicating with drugs would be less likely to use drugs if they were less depressed (Nunes and Quitkin, 1997). However, Nunes and Quitkin (1997) further add that this might be different when depression was not the main contributing factor for substance misuse in which case psychiatric medication will have little or no effect on substance misuse. The current study indicated that a larger proportion of the sample were not on psychiatric medication (56%) as compared to those on medication (44%). There is a possibility that this finding could be owing to chance or could be indicative of the fact that many drug users are not on prescribed medication despite having a need for psychiatric medication.

The results of the current study indicated that there was no difference in the levels of dependency reported by current drug users in each housing category who were on or were not on psychiatric medication. However, when comparing

drug use across the housing groups separate analysis of both those on and those not on psychiatric medication indicated that homeless drug users reported higher levels of dependency than the stably housed users. On composite drug scores, the results of the current study indicated no significant difference between the housing groups for those on or those not on psychiatric medication. There are no other studies that have looked at the efficacy of commonly prescribed psychiatric medications on drug dependency levels or composite drug scores. The finding from the current study could be suggestive of small effect of psychiatric medication on drug dependency behaviour, but takes into consideration the small sample sizes. A review by Agabio et al. (2018) found low quality evidence to support the clinical use of antidepressants in the treatment of people with both depression and alcohol dependence, emphasising that antidepressants had no effect on abstinence from alcohol or depression severity. Although their study only studied alcohol users, it nevertheless emphasised a gap in research on the efficacy of antidepressants in dually diagnosed individuals.

Further analysis of patterns of drug use of specific drugs indicated that there were no significant differences in the use of opiates, cannabis, crack or stimulants between drug users who were on as compared to those not on psychiatric medication. Interestingly, comparison of opiate and stimulant use between housing groups indicated that there was no significant difference in use for those on psychiatric medication, however for those not on psychiatric medication, once again, homeless group consumed more opiates and stimulants than stably housed groups. These results may be indicative of psychiatric medication reducing drug use, and indeed in tables 3.9 and 3.12 there is an indication that those not on psychiatric medication did use more opiates and stimulants. However, direct comparisons of those on and not on psychiatric medication in each of the housing groups revealed no significant differences, so if psychiatric medication was reducing drug use it is a subtle effect and further studies would need to be conducted to confirm this with a larger sample size.

An unexpected finding was on alcohol use, where within the unstably housed, those on medication indicated a significantly higher amount and frequency of

alcohol use as compared to those not on medication. This finding could be considered to be anomalous to the current study or indicates a possibility that unstably housed drug users on psychiatric were consuming significantly higher alcohol as a means to self-medicate or cope with unmet psychological needs or unstable living conditions. Those assessed as eligible for psychiatric medication are more likely to be individuals with greater psychological needs both in terms of medication and psychological interventions.

Furthermore, there were no differences in the use of opiates, cannabis, crack or stimulants between the different housing groups for those currently prescribed psychiatric medication. However, there were group differences revealed for those not currently prescribed psychiatric medication. These results indicated that for those not on psychiatric medication, homeless drug users used significantly more opiates than both the stably and unstably housed users and used opiates more frequently than the stably housed drug users. Limited studies that have assessed the efficacy of commonly prescribed psychiatric medication indicate no clear-cut evidence of effect on opiate related outcomes (Nunes and Quitkin, 1997, p.69). Kleber et al. (1983) compared a placebo group with a group prescribed imipramine (antidepressant), where both groups identified as primary opiate users and were on a methadone treatment programme. The study results found that there was no difference in opiate use between the two groups as tested by urine toxicology tests. One of the possible reasons for this could be owing to depression being transient in opiate misusers (Rounsaville, 1986) or that there were other factors influencing both mood and substance use such as housing circumstances which was not studied by Kleber et al. (1983). In the current study, analysis of stimulant use indicated that homeless drug users not on psychiatric medication had significantly higher amount of stimulant use as compared to stably housed drug users. Previous studies (Lima et al., 2003) that have assessed the efficacy of antidepressants for stimulants have specifically looked at cocaine disorder, to indicate that there was no evidence to support the clinical efficacy of antidepressants on cocaine disorder outcomes. Therefore, in light of the above findings and previous studies it is

possible that psychiatric medication did not have a significant effect on substance use irrespective of housing circumstances.

One of the explanations might be suggestive that treating depressive symptoms is not the only answer to treating substance misuse, and the self-medication-hypothesis (Khantzian, 1985) despite being very useful may not be applicable in all circumstances for all individuals. Future studies that evaluate the efficacy of psychiatric medications in more detail, taking into account commonly prescribed antidepressants and the contextual factors would be worth pursuing. Another unexpected finding in the current study was that unstably housed drug users on psychiatric medication were consuming significantly higher amount and frequency of alcohol as compared to both homeless and stably housed drug users. The finding may be considered anomalous to the research study or indicative of unmet psychological needs that are unique to drug users in unstable housing, such as being overlooked by services as they are neither stably housed nor in chaotic, homeless circumstances. The above interpretations of the currently presented data are made cautiously in recognition that some groups had a small number of participants in them which reduced statistical power suggesting a future study with a larger sample would add more enhanced knowledge. As elaborated in Ch 2, the challenges of recruitment of current drug users for research studies influenced the number of participants in the current study. Additionally, research suggests that adherence to any form of prescribed medication among the homeless remains questionable especially when prioritising basic necessities (Paudyal et al., 2017), so it is possible that despite being prescribed psychiatric medications many individuals may not adhere to medication as recommended resulting in poor or no effect.

3.7.3 Opioid substitute treatment medication

Torrens et al., (2005) state that the reduction in psychiatric symptoms does not always imply that there will be a reduction in substance use so the best option for drug treatment is a concomitant approach to address both psychiatric and substance use issues simultaneously. Most drug services in

the UK prescribe OST as a means to reduce illicit opioid use in addition to reducing infection and overdose mortality (Parpouchi et al., 2017).

Overall, the findings of the current study indicated that a greater proportion of the sample were on OST medication (73%), where those not on OST (27%) were excluded from the analysis owing to a small sample size. The results of the present study indicated that despite being on OST medication, homeless drug users indicated higher drug dependency and greater composite drug use than both stably and unstably housed drug users. More specifically, homeless drug users currently prescribed OST used more opiates, crack and stimulants and used these drugs more frequently than both the stably and unstably housed drug users. Alcohol and cannabis were the only exception where there was no significant difference between the three housing groups. The results highlight the levels of disparity between the homeless and housed drug users, more specifically between the homeless and unstably housed who despite having instability (in housing) consume significantly less substances at significantly lower frequency than the homeless group. These findings of the current study were contrary to those by Eyrich-Garg et al. (2008) on drug users in drug treatment programmes (on OST) where the literally homeless were mostly similar to marginally housed drug users. It is possible that this difference in findings may be owing to a difference in the measures utilised to assess drug use or a difference in the countries (i.e., how SUD is perceived and treated in USA as compared to UK).

The current results for OST may not be surprising because majority of the drug users in each housing group were being prescribed OST and therefore the similarity of this result to the overall result for all drug users could be predicted. However, although there is no direct comparison with drug users on or not on OST, the similarity of patterns of use with the larger sample may be indicative of little effect of OST on drug use and dependency. To the best of knowledge, the findings from the current study is the first such comparison of housing groups on UK based data.

3.8 Conclusion

Results from the current study indicated differences in drug use behaviour among the homeless, unstably housed and stably housed drug users. The results indicated that homeless drug users experienced significant disadvantage compared to stably housed drug users with higher levels of drug dependency, overall drug use along with stimulants and opiates use. The results highlight that despite being vulnerably housed; unstably housed drug users were mostly similar to stably housed drug users in their drug use behaviour. Having some form of housing was associated with lower overall drug and stimulant use, which is noteworthy given that stimulant use is significantly associated with homelessness.

Comparison between housing groups who were prescribed or not prescribed psychiatric medication indicated similar results on dependency, with homeless drug users reporting significantly higher levels of drug dependency than stably housed drug users. Overall, psychiatric medication indicated little or no effect on drug use behaviour. The results, however, need to be interpreted with caution owing to small sample sizes. Comparison of the effect of OST medication on drug dependency and drug using behaviour between the housing groups indicated a similarity to overall results possibly as a large proportion of the sample were being prescribed OST medication. The results highlighted the disadvantage of homeless drug users who despite being on substitute medication indicated higher dependency, overall drug use and greater amount and frequency of opiates, crack and stimulant use as compared to unstably and stably housed counterparts.

Based on the findings of the current study, it may be recommended that the housing circumstances of drug users should be taken into consideration when developing and implementing treatment plans for SUD. Whilst housing is important for all individuals with SUD, those with greater severity in drug-related problems face additional barriers. Improving access to stable housing conditions may offer improved chances for treatment and recovery whilst offering stability in an important aspect of their lives.

CHAPTER 4: The association between drug users' housing status, health and quality of life.

4.1 Introduction

Research suggests that people who live with drug addiction commonly have poorer physical and mental health than the general population (Kemp et al., 2006). Some of the health problems associated with drug addiction are heart disease, hypertension, asthma, liver disease, cirrhosis, blood-borne viruses, injury/poisonings/overdose, low mood, nervous disorder, and psychosis (Weisner et al., 2001; Klee and Reid 1998b). Recent reports in the UK suggest that a large proportion of drug users report depression and anxiety (Black, 2020), where 1 in 4 drug user reports feeling low all the time (Neale, 2004). A significant effect of drug misuse is on mortality rates, where death rates among drug users are higher than the general population (Black, 2020; World Drug Report, 2021), possibly owing to poor health. Both physical and mental health are considered as components of quality of life (De Maeyer et al., 2009; Laudet, 2011; Strada et al., 2017), which also influence people's perception of quality of life.

Although most research narrowly focusses on health-related quality of life, overall QoL is a much wider domain, which provides a global measure of well-being. Researchers suggest that it provides an overall appraisal of health and the impact of health on day-to-day living (De Maeyer et al., 2009; Muldoon et al., 1998). In addiction studies, QoL is a useful measure to assess the impact of drug use on the lives of drug users and to evaluate the quality and success of SUD treatment on their well-being (Strada et al., 2017). QoL encompasses several domains (Laudet, 2011) such as physical and psychological health, social relationships and environmental circumstances (Kelly et al., 2018). Environmental circumstances such as the satisfaction with one's housing has been overlooked for many years in SUD patients (Dietze et al., 2010), where housing satisfaction is just as important as health and social circumstances. Researchers in Australia (Stewart et al., 2021) suggest that the investigation of satisfaction with domains such as accommodation circumstances can guide and inform intervention strategies such as improved access to housing

alongside SUD treatment, thus reiterating the need to assess this domain in SUD patients.

Most research on QoL concurs that there is a lack of consensus on the definition of QoL (De Maeyer et al., 2010; De Maeyer et al., 2011; Strada et al., 2017). For the purpose of this study, the research will utilise the definition provided by the National Drug Treatment and Monitoring System (NDTMS, Office of Health Improvement and Disparities, 2022) in the UK that conceptualises QoL as the patient's view on their 'ability to enjoy life, get on with family and partner' (Public Health England, 2017) therefore including social well-being along with subjective well-being. Although there are different ways to assess QoL, the current study will utilise the measure utilised by NDTMS via the treatment outcome profile survey (Marsden et al., 2008) as discussed in section 4.3.4.

In recent decades, the significance of understanding and measuring QoL among substance dependent patients has gained momentum. QoL is not just an assessment of overall well-being but a measure of treatment efficacy, adherence and outcome (Smith and Larson, 2003; Strada et al., 2017; Laudet, 2011), where higher QoL is indicative of good outcomes in addiction treatment (Kelly et al., 2018). To elaborate, a study by Kelly et al. (2018) found that drug users who scored lower on QoL had greater distress, higher likelihood of using heroin and amphetamines and greater severity in addictive behaviour than high scorers, all of which are indicative of poorer treatment outcomes. Their study recommended that assessing QoL scores among SUD patients should be utilised as a means to assess and predict treatment success. Being able to predict treatment outcomes implies that services can intervene in a timely and efficient manner to improve outcomes and prevent further deterioration or relapse.

Research indicates that along with substance use, changes in housing circumstances from homeless to housed were associated with improvements in QoL (Aubry et al., 2016). The authors asserted that provision of housing enhanced the perceived QoL scores more rapidly compared with treatment as usual (without provision of housing). Research in Canada indicates that

homeless people report poorer QoL than the general population, where longer periods of homelessness and SUD were associated with poorer QoL scores (Gentil et al., 2019). Their study, however, did not compare QoL among homeless as compared to housed drug users. Other longitudinal research among homeless individuals has indicated that health problems and SUD were significantly associated with lower QoL scores (Gadermann et al., 2021). In summary, studies on QoL suggest that SUD, health problems and homelessness are associated with QoL.

Although a few studies look at the health or drug using behaviour among homeless vs housed SUD patients (Eyrich-Garg et al., 2008; Krupski et al., 2015), there is a paucity of research that specifically investigates if differences in housing circumstances are associated with the QoL of SUD patients. More importantly, drug services in England routinely collect data about QoL and health via NDTMS agreed protocols, but there remains limited understanding about how this data can be utilised within treatment services. Previous research has suggested that a better understanding of factors associated with higher QoL may inform drug services and policymakers about ways to improve QoL for SUD patients (Carr et al., 2001) and assist in evaluation of patient outcomes (Gentil et al., 2019).

Further, although there is a consensus among researchers about the prevalence of psychiatric disorders among SUD patients, studies to assess the efficacy of psychiatric medication among SUD patients indicate inconclusive results (Torrens et al., 2005; Nunes et al., 1998) with most results indicating modest effect to no effect on mood. More importantly, none of the studies assess the efficacy of medication after taking into account contextual factors such as housing circumstances. More importantly, although many SUD patients are prescribed psychiatric medication along with OST medication, the association of both psychiatric medication and OST on QoL and health among drug users in different housing status groups remains unknown.

Although there are very few studies that look at associations between QoL and homeless (Gentil et al., 2019) or QoL and SUD (Kelly et al., 2018), they do not investigate QoL among non-homeless drug users or use sampling techniques

that exclude drug users who are not in SUD treatment. Additionally, to the best of knowledge, none of the studies assess QoL among unstably housed drug users who may reside in unstable, problematic circumstances such as rat-infestation, mould or risk of violence from other residents. It is possible that unstably housed drug users, because they are technically 'housed', are less likely to access specialist services such as homeless shelters, soup kitchens or community services involved specifically with homeless, where most studies on homeless individuals are conducted. This leaves a gap in the understanding of the wider impact of housing circumstances on overall QoL and health of drug users. To summarise, the association between housing circumstances of SUD patients, their QoL and health has not been systematically investigated especially within the UK population, implying an important gap in addiction literature (Fountain et al., 2003; Public Health England, 2016; Public Health England, 2020; Black, 2021). Additionally, the efficacy of both psychiatric medication and OST medication on health and QoL on the basis of housing circumstances has not been investigated. Enhanced understanding of factors that can influence drug users' health and well-being can assist in informing interventions, guide treatment planning and improve recovery outcomes for drug users.

Therefore, this study seeks to investigate if there is a difference in the QoL and health of drug users on the basis of their housing status.

4.2 Research aims and objectives

Objective 1: To investigate if there are differences between drug users in different housing status groups: No Housing Problems (NHP) or stably housed, Housed with Problems (HP) or unstably housed, and No Fixed Abode (NFA) or homeless on the following measures: -

1. Quality of life.
2. Physical health.
3. Psychological health.
4. Levels of perceived stress.

5. Severity of generalised anxiety disorder.
6. Severity of depression.

The definition for each of the housing categories is elaborated in Ch. 2, section 2.1.

Objective 2: To assess whether the use of opiates, cannabis, alcohol and stimulants predicts the self-reported health and QoL of drug users.

Objective 3: To identify if satisfaction with accommodation status is related to health and QoL.

Objective 4: To assess if there is a difference between those on prescribed psychiatric medication vs those not on psychiatric medication on physical health, psychological health and QoL.

Objective 5: To assess if there is a difference on the basis of OST medication between the housing groups on physical health, psychological health and QoL.

4.3 Method

4.3.1 Study Design

The study employed a between-subject, cross-sectional design to assess differences in health and well-being measures in drug users with varying housing status groups. The between subjects variables for study 2 were:

Exposure variable: Mutually exclusive housing status which has three levels; no housing problems (NHP) or stably housed, housing problems (HP) or unstably housed, or homeless or No Fixed Abode (NFA). See chapter 2, section 2.1 for detailed description of these groups.

Outcome variables: Psychological health, Physical health, Quality of life, Severity of Generalised anxiety disorder, Severity of Depression and Perceived stress levels.

4.3.2 Study Sample

The participants of this study comprised 109 individuals who were all accessing some form of service at Forward Leeds. The sample consisted of

current drug users who identified as being stably housed (n=35), unstably housed (n= 36) or homeless (n=38). Characteristics of the sample are provided in chapter 3, section 3.5 in table 3.1.

4.3.3 Inclusion and Exclusion Criteria

Participants were recruited from Forward Leeds (FL), which is a drug and alcohol service in Leeds including clients from drop-in groups, outreach, housing, needle exchange and harm reduction services. All individuals who were not currently registered in drug treatment (e.g. drug users who had dropped out, relapsed or were on a waiting list for re-registration) who identified themselves as substance misusers and satisfied the inclusion criteria were eligible to participate (see chapter 2, section 2.3.2 or chapter 3, section 3.3.3 for details on inclusion and exclusion criteria).

4.3.4 Measures

The data collection consisted of standardised questionnaires, most of which are routinely used in drug services in England, as follows:

Modified Treatment Outcome Profile Survey (TOPS, Marsden et al., 2008)
The TOPS (Appendix 2.1) is a validated national outcome monitoring tool for substance misuse services developed by the National Treatment Agency (changed to Public Health England and now Office for Health Improvement and Disparities). Details about the TOPS is provided in chapter 3 section 3.3.4. The TOPS consists of four sections:

Sections 1 and 2 comprise questions about drugs consumed and injecting risk behaviour as elaborated in chapter 3.

Section 3: Health and social functioning consisting of psychological health (anxiety, depression, problem emotions and feelings), physical health (extent of physical symptoms and bothered by illness) and overall quality of life (defined as ‘able to enjoy life, gets on with family and partner, etc’) are each measured on a Likert scale of 0 - 20 (0= poor and 20= Good).

A fourth section within the questionnaire on crime status, current training and employment was not used for this study as it was not consistent with the research objectives of the present study.

A fourth section within the questionnaire on Crime status, current training and employment was excluded for this study as it was not consistent with the research objectives of the present study.

An additional question on ‘housing conditions’ was created in the modified version of TOP survey for the current study, asking participants whether they had a housing problem (or unstable housing), were homeless (or no fixed abode) or had stable housing with responses being yes or no (Y/N). To achieve this, participants identified themselves into *only* one of the three categories based on their current accommodation status in the last 4 weeks: homeless or no fixed abode (NFA), unstable accommodation or housing problems (HP) and stable accommodation or no housing problems (NHP). Since 2018, after completion of data collection for this study, this section in TOP survey was amended by Public Health England to include a question about unsuitable housing defined by housing that is likely to have a negative impact on health and well-being or the likelihood of achieving recovery. Details of the housing groups are elaborated in chapter 2, section 2.1. The modified version included an additional question about participants’ satisfaction with their accommodation status (0-20, where 0= poor and 20=good), where higher scores were indicative of greater satisfaction.

Patient Health Questionnaire (PHQ-9, Kroenke et al., 2001)

The PHQ-9 is commonly utilised for screening, monitoring and measuring changes in severity of depression in the last two weeks (Appendix 2.2). It consists of 9 items based on DSM-IV criteria and remains unchanged for the DSM-V-TR (DSM-V, American Psychiatric Association, 2022). The PHQ-9 can be self-administered (Kroenke et al., 2001), where scoring ranges from 0 (not at all), 1 (several days), 2 (more than half the days) and 3 (nearly every day). The scores on PHQ-9 range from 0-27, with the cut off being at 5, 10, 15 and 20 indicating mild, moderate, moderately severe and severe depression. Scores below 5 are indicative of the absence of depression. The PHQ-9 has

been widely used in primary care and clinical populations (Spitzer et al., 2000) and is used routinely within drug treatment services in Leeds. The validity of PHQ-9 has been assessed against an independent structured mental health professional (MHP) interview in clinical patients. It was found that the PHQ-9 score ≥10 had a sensitivity of 88% and a specificity of 88% for major depression (Kroenke et al., 2001). Additionally, the internal reliability of the PHQ-9 was found to be excellent with Cronbach alpha of 0.89 and high test-retest reliability at intraclass correlation coefficient=0.92 (Kroenke et al., 2001). A study by Delgadillo et al. (2011) on a sample of 103 substance use disorder patients indicated that a score ≥12 had a sensitivity of 81% and specificity of 75% for major depression. The study indicated that the PHQ-9 had good test-retest reliability (intra-class correlation, 0.78) and internal consistency (Cronbach's alpha, 0.84).

Generalised Anxiety Disorder (GAD-7, Spitzer et al., 2006)

The GAD-7 (appendix 2.3) is used for screening and measuring the severity of generalised anxiety disorder in the last two weeks. It is a brief, standardised measure containing 7 items and can be self-administered. The scale was developed and validated based on DSM-IV criteria, but it remains clinically useful after publication of the DSM-V-TR because the differences in GAD diagnostic criteria are minimal (Locke et al., 2015). Scoring ranges from 0 (not at all), 1 (several days), 2 (more than half the days) and 3 (nearly every day). GAD-7 scores range from 0-21 with a score of 10 or more considered indicative of generalised anxiety disorder. As with the PHQ-9, cut off scores of 5, 10, 15 and 20 indicate mild, moderate, moderately severe and severe anxiety (Spitzer et al., 2006).

In a primary care sample of 965 patients, the internal consistency of GAD-7 was found to be excellent with Cronbach alpha of 0.92 and a test-retest reliability at 0.83 (Spitzer et al., 2006). At a cut off score of 9, the GAD-7 had a sensitivity of 89 % and a specificity of 82 % for detecting GAD as compared to a structured psychiatric interview.

Delgadillo et al., (2012) found the GAD-7 to be a useful tool in detecting anxiety in addiction services. In a sample of 103 patients the internal consistency of

GAD-7 was found to be high (Cronbach alpha=0.91) with test-retest reliability at 0.85.

The PHQ-9 and the GAD-7 questionnaires utilised for this study had an additional question section on Titration status (T-Status) which is routinely used in addiction services in Leeds to ask questions about prescribed medication for addiction or psychiatric medication.

Cohen's Perceived Stress Scale (PSS-10, Cohen et al., 1983)

The PSS-10 (Appendix 2.3) is a popular, brief 10-item instrument used to measure perception of stress (feelings and thoughts in the last month) where the items detect how unpredictable, uncontrollable and overloaded the respondents find their lives or the degree to which individuals perceive their life as stressful (Cohen et al., 1983). Scoring ranges from 0-40, with higher scores indicative of greater stress. The scoring is on a 5-point scale ranging from 0 (never) to 4 (almost always). Example items include 'In the last month how often have you felt that things were going your way?', 'In the last month how often have you been upset because of something that happened unexpectedly?' Positively worded items are reverse scored and rating scores are summed with higher scores indicating greater perceived stress

Although it was originally developed as a 14-item scale, the authors reported that the 10-item version showed stronger psychometric characteristics in comparison to the 14-item version (Cohen and Williamson, 1988). PSS was found to be valid and reliable in a clinical sample (Hewitt et al., 1992) similar to the sample in this study.

The PSS-10 has demonstrated adequate reliability coefficients where alpha ranges from 0.75 to 0.91 and test-retest reliability with correlations from 0.55 (six-week interval) to 0.61(12 months) (Cole, 1999).

4.3.5 Ethical Approval

Ethical approval for the study was granted by the Ethics committee of the Faculty of Medicine and Health at the University of Leeds (ethics reference phase 1 and 2: 16-0032 and 17-0221 respectively). Additionally, the Forward

Leeds Research on premises permission (Appendix1.4) had been granted by Humankind charity.

4.4 Procedure

Details about the procedure are provided in Chapter 3 section 3.4. The questionnaires were in paper format and were in the order of modified version of Treatment Outcome Profile Survey (TOPS; Appendix 2.1), a Mental Health Questionnaire (Appendix 2.2) which consists of the Psychological Health Questionnaire-9 (PHQ-9), General Anxiety Disorder (GAD-7) and the Perceived Stress Scale (PSS; Appendix 2.3).

4.5 Statistical Analysis

All data for the study was analysed using SPSS version 24 (IBP Corp, 2016). Data was assessed for homogeneity of variance and normality of distribution prior to statistical analyses. If these were violated non-parametric equivalent tests were conducted.

To assess differences in health and well-being measures of drug users in the different housing status groups one-way between subjects ANOVAs were conducted. Significant main effects of group were further investigated using post hoc t-tests and adjusted for multiple comparisons using the Bonferroni correction.

To further explore the data, stepwise multiple regression analyses were conducted to evaluate whether the use of specific pharmacological classes of drugs predicted the self-reported health and quality of life of all participants. Total drug scores were calculated by multiplying the typical amount of drug used on each day by the frequency (number of days) of use of the drug in the last 28 days for each of the categories: alcohol, opiates, cannabis and stimulants. The stimulant category comprised crack, cocaine and amphetamines.

To assess if there was a relationship between satisfaction with accommodation status and health and QoL, Pearson's r correlation coefficient tests were utilised. A 2 by 3 between-subject ANOVA was planned to analyse whether there were differences in health and well-being of participants who were currently taking psychiatric medication or OST medication vs those not

taking medication in each of the housing groups, where the data was analysed using appropriate parametric and non-parametric statistics such as independent t-tests, Mann-Whitney U tests and Kruskall-Wallis H tests.

4.6 Results

4.6.1 Difference between drug users in different housing status groups on quality of life, physical and psychological health

Quality of Life

Analysis of the quality of life data (QOL) indicated a significant main effect of group ($F(2,106) = 13.819$, $p<0.001$, $\eta^2 = 0.207$). As shown in Figure 4.1, Post-hoc analysis demonstrated that homeless drug users had significantly lower QoL scores as compared to stably housed ($p<0.001$) and unstably housed ($p<0.05$) drug users. Furthermore, unstably housed drug users had significantly lower QoL compared to stably housed drug users ($p< 0.05$).

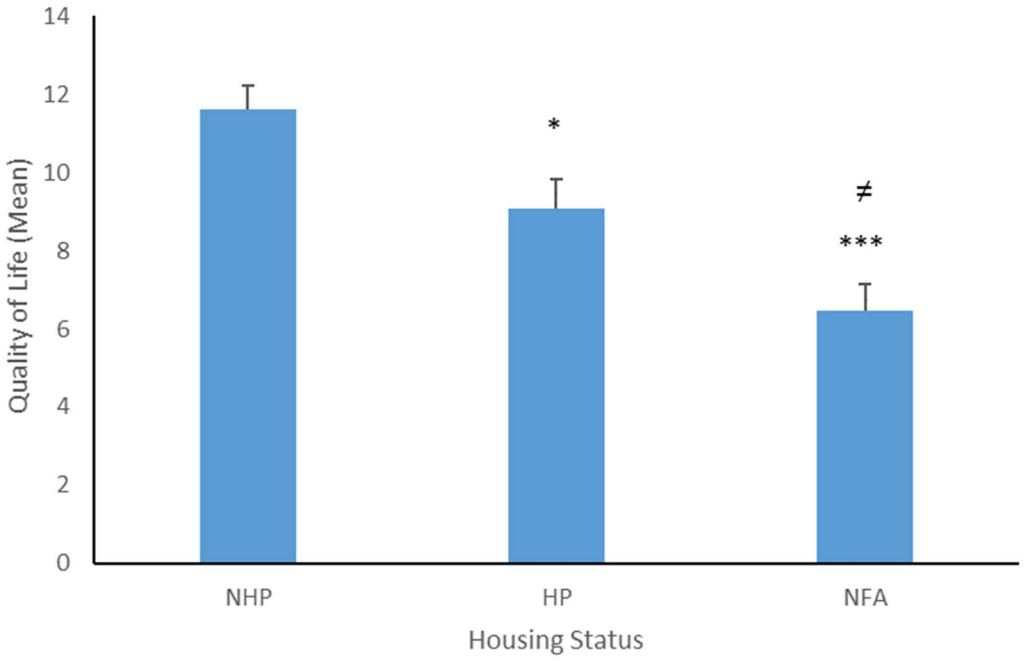

Figure 4.1: Quality of Life in groups: No Housing Problem, Housing Problem and No Fixed Abode *p<0.05, **p<0.01, ***p<0.001 (Compared to NHP) & and ≠ p<0.05 (Compared to HP). Error bars represent standard errors.

Physical Health

Analysis of the physical health data indicated a significant main effect of group ($F(2,106) = 5.103$, $p < 0.05$ $\eta^2 = 0.102$). Post-hoc analysis demonstrated that homeless drug users had significantly lower physical health scores compared to those in the stably housed group ($p<0.01$). There were no significant differences between the physical health scores of unstably housed group as compared to both stably housed and homeless drug users. (See as illustrated by Figure 4.2).

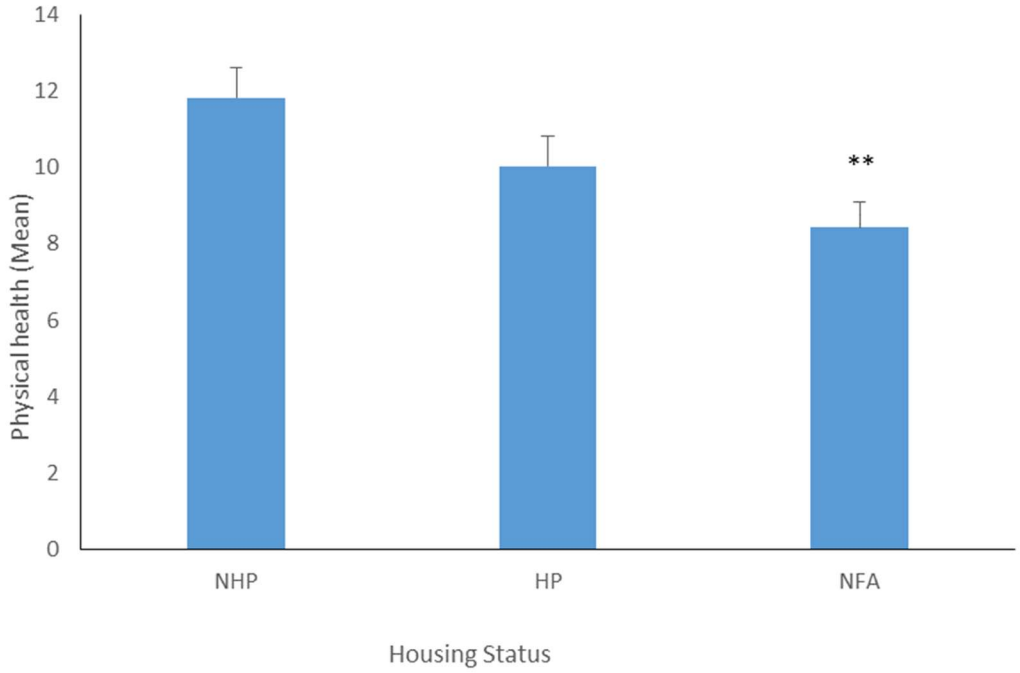

Figure 4.2: Physical Health in groups: No Housing Problem, Housing Problem and No Fixed Abode *p<0.05, **p<0.01, ***p<0.001 (Compared to NHP). Error bars represent standard errors.

Psychological Health

Analysis of the psychological health data revealed a significant main effect of group ($F(2,106) = 10.222$, $p < 0.001$, $\eta^2 = 0.161$). Post-hoc analysis demonstrated that both homeless and unstably housed drug users had significantly lower psychological health scores as compared to those who were stably housed (where $p<0.001$ and $p<0.01$ respectively) as shown in Figure 4.3. There were no significant differences between the psychological health scores of unstably housed group and homeless group.

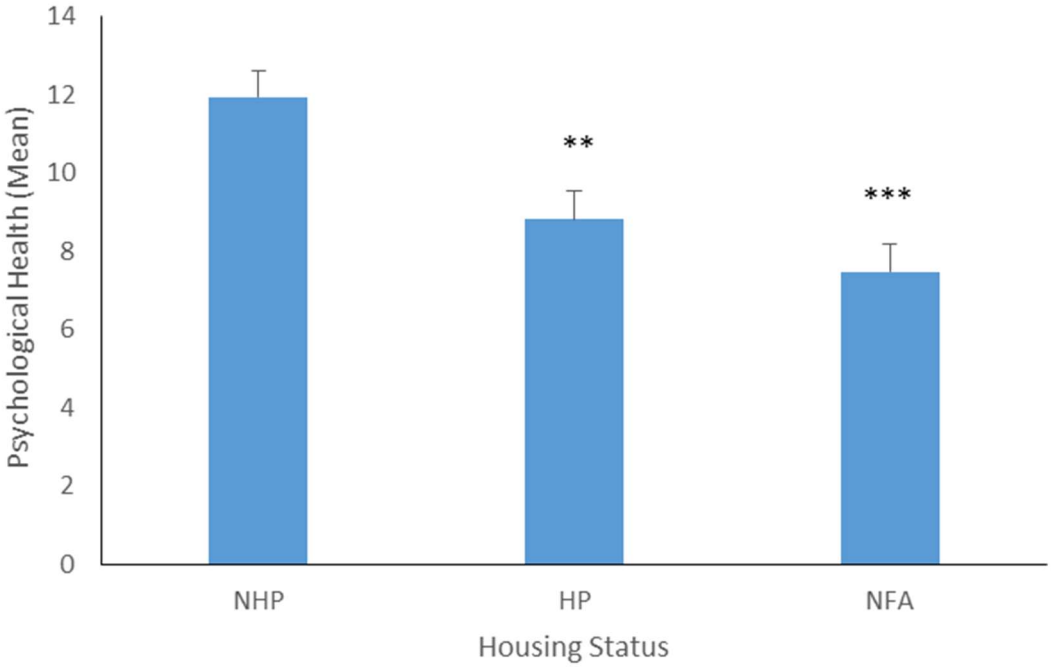

Figure 4.3: Psychological Health in groups: No Housing Problem, Housing Problem and No Fixed Abode *p<0.05, **p<0.01, ***p<0.001 (Compared to NHP). Error bars represent standard errors.

Severity of Depression

Analysis of data from the PHQ-9 scale revealed a significant main effect of group ($F(2,106) = 7.459$, $p<0.05$, $\eta^2 = 0.123$). Post-hoc analysis as illustrated in table 4.1 revealed that both homeless and unstably housed drug users reported greater severity of depression than stably housed drug users (where $p<0.01$ and $p<0.05$ respectively). There was no significant difference in depression between homeless and unstably housed groups.

Table 4.1: *Measures of Psychological well-being for No Housing Problems, Housing problems and No Fixed Abode groups.*

Measure	No Housing Problem (n=35)	Housing Problem (n=36)	No Fixed Abode (n=38)
Depression (PHQ-9): *M(SD)*	11.54(6.33)	15.28(5.90) *	16.87 (5.81) **
Anxiety (GAD-7): *M(SD)*	8.17(5.44)	12.78(6.70) **	14.50(4.71) ***
Stress (PSS-10): *M(SD)*	21.66(6.74)	27.78(6.74) **	28.32(7.19) ***

PHQ-9 scores range 0-27, GAD-7 score range 0-21, PSS-10 score range 0-40 with higher scores indicative of greater severity in depression, anxiety and stress. *Note. M*=mean, *SD*=standard deviation, *p<0.05, **p<0.01, ***p<0.001 (Compared to NHP).

Severity of Anxiety

The analysis of the GAD data indicated a significant main effect of group ($F(2,106) = 12.026$, $p<0.001$, $\eta^2 = 0.185$).

Post hoc analysis revealed that both homeless and unstably housed drug users reported significantly greater anxiety than stably housed group (where $p<0.001$ and $p<0.01$ respectively) as indicated in table 4.1. There was no significant difference in anxiety between the unstably housed and homeless groups.

Perceived Stress

Analysis of data on PSS indicated a significant main effect of group ($F(2,106) = 10.264$, $p<0.001$, $\eta^2 = 0.162$).

Post-hoc analysis as shown in table 4.1 revealed that both the homeless and unstably housed drug users reported significantly higher stress than stably housed drug users ($p<0.001$ and $p<0.01$ respectively). There was no significant difference in perceived stress between homeless and unstably housed groups.

4.6.2 Evaluating whether the use of alcohol, cannabis, opiates and stimulants can predict the self-reported physical and psychological measures of well-being

Quality of Life

A stepwise multiple regression was conducted to evaluate whether the amount of alcohol, cannabis, opiates and stimulants consumed predicted the quality of life (QoL) scores in all drug users. At step 1 of the analysis opiates entered into the regression equation and was significantly related to QoL ($F(1,107) = 16.36$, $p < .001$). The multiple correlation co-efficient was .36, indicating approximately 13.3% of the variance of the QoL could be accounted for by opiate scores. Alcohol, cannabis and stimulant scores were not significant predictors ($p > 0.05$) and did not enter the equation in Step 2 of the analysis. The results indicated that decrease in opiate use predicted an increase in QoL scores.

Thus, the regression equation for predicting QoL was:
Predicted QoL = 10.21 + (- .432* opiates total).

Physical health

A stepwise multiple regression was conducted to evaluate whether the amount of alcohol, cannabis, opiates and stimulant consumed predicted the physical health scores of the drug users. At step 1 of the analysis opiates entered into the regression equation and was significantly related to physical health ($F(1,107) = 12.21$, $p < .05$). The multiple correlation co-efficient was .32, indicating approximately 10.2% of the variance of the physical health scores could be accounted for by opiate scores. Alcohol, cannabis and stimulant scores were not significant predictors ($p > 0.05$) and did not enter the equation in Step 2 of the analysis. The results indicated that decrease in opiate total predicted an increase in physical health scores. Thus, the regression equation for predicting physical health scores was:
Predicted physical health = 11.16 + (- .387* opiates total).

Psychological health

A stepwise multiple regression was conducted to evaluate whether the amount of alcohol, cannabis, opiates and stimulant consumed predicted psychological health scores of the drug users. At step 1 of the analysis opiates entered into the regression equation and was significantly related to psychological health ($F(1,107) = 16.46$, $p < .001$). The multiple correlation co-efficient was .36, indicating approximately 13.3% of the variance of the psychological health scores could be accounted for by opiate scores. Alcohol, cannabis and stimulant scores were not significant predictors ($p > 0.05$) and did not enter the equation in Step 2 of the analysis. The results indicated that decrease in opiate total scores predicted an increase in psychological health scores. Thus, the regression equation for predicting psychological health scores was:

Predicted psychological health = 10.599 + (- .387* opiates total).

Severity of Depression

A stepwise multiple regression was conducted to evaluate whether the amount of alcohol, opiates, cannabis and stimulant consumed predicted PHQ-9 scores of the drug users. At step 1 of the analysis opiates entered into the regression equation and was significantly related to depression ($F(1,107) = 11.70$, $p < .05$). The multiple correlation co-efficient was .31, indicating approximately 9.9% of the variance of the depression scores could be accounted for by opiate scores. Alcohol, cannabis and stimulant scores were not significant predictors ($p > 0.05$) and did not enter the equation in Step 2 of the analysis. The results indicated that increase in opiate total scores predicted an increase in depression scores. Thus, the regression equation for predicting PHQ-9 scores was:

Predicted PHQ-9 scores = 13.167 + (.512* opiates total).

Severity of Anxiety

A stepwise multiple regression was conducted to evaluate whether alcohol, opiates, cannabis and stimulants were necessary to predict GAD-7 scores. At step 1 of the analysis opiates entered into the regression equation and was significantly related to anxiety ($F(1,107) = 6.39$, $p < .05$). The multiple

correlation co-efficient was .24, indicating approximately 5.6% of the variance of the anxiety scores could be accounted for by opiate scores. Alcohol, cannabis and stimulant scores were not significant predictors (p> 0.05) and did not enter the equation in Step 2 of the analysis. The results indicated that increase in opiate total scores predicted an increase in anxiety scores. Thus, the regression equation for predicting GAD-7 scores was:
Predicted GAD-7 scores = 10.816 + (.378* opiates total).

Perceived Stress

A stepwise multiple regression was conducted to evaluate whether alcohol, opiates, cannabis and stimulants were necessary to predict PSS scores. At step 1 of the analysis opiates entered into the regression equation and was significantly related to perceived stress (F (1,107) = 9.68, p < .05). The multiple correlation co-efficient was .29, indicating approximately 8.3% of the variance of the perceived stress scores could be accounted for by opiate scores. Alcohol, cannabis and stimulant scores were not significant predictors (p> 0.05) and did not enter the equation in Step 2 of the analysis. The results indicated that increase in opiate total scores indicated an increase in stress total scores. Thus, the regression equation for predicting PSS-10 scores was:
Predicted PSS-10 scores = 24.420 + (.511* opiates total).

4.6.3 Identifying if satisfaction with accommodation status is related to physical and psychological measures of well-being.

Quality of Life

A Pearson correlation coefficient was computed to assess the relationship between satisfaction with accommodation status and QoL scores. The output indicated that there was a significant positive correlation between satisfaction with accommodation status and QoL r (107) = .578, p<.001 where greater satisfaction with accommodation indicated higher QoL.

Physical health

The output indicated that there was a significant positive correlation between satisfaction with accommodation status and physical health r (107) = .362, p<.001, where greater satisfaction with accommodation status indicated better physical health.

Psychological health

The output indicated that there was a significant positive correlation between satisfaction with accommodation status and psychological health r (107) = .447, p<.001 where greater satisfaction with accommodation status indicated better psychological health.

Severity of Depression

The output indicated that there was a significant negative correlation between satisfaction with accommodation status and severity of depression r (107) = -.309, p<.01 where higher satisfaction with accommodation status indicated lower severity of depression.

Severity of Anxiety

The output indicated that there was a significant negative correlation between satisfaction with accommodation status and severity of anxiety r (107) = -.333, p<.001 where higher satisfaction with accommodation indicated lower severity of anxiety.

Perceived Stress

The output indicated that there was a significant negative correlation between satisfaction with accommodation status and perceived stress r (107) = -.419, p<.001 where higher satisfaction with accommodation indicated lower perceived stress.

4.6.4 Difference between housing status groups on their health and QoL based on psychiatric medication

Of the 109 participants in this study, only 48 SUD patients (44%) reported being on prescribed psychiatric medication whereas 61 SUD patients (56%) reported not being on any psychiatric medication.

Quality of Life

Independent t test indicated that there was significant difference on Quality of Life (QoL) scores between those on psychiatric medication as compared to those not on medication within the stably housed groups only where t (33) = -2.424, p< .05, where those on medication had significantly lower QoL scores than those not on medication.

However, there was no significant difference between unstably housed groups t (34) = -1.971, p> .05, and the homeless groups t (36) = .919, p> .05 for those on psychiatric medication and those not on medication.

As Levenes was violated, a Kruskall-Wallis test was utilised that indicated that there was significant difference in QoL scores between groups for those on psychiatric medication, H (2) = 7.842, p <.05 and those not on medication, H (2) = 15.729, p < .001.

Post hoc analysis using Mann Whitney U tests for those on medication indicated that there was significant difference between the stably housed and homeless drug users (U= 63.5, z= -2.822, r = -.50 and p <.01), where stably housed drug users had significantly higher QoL as compared to homeless drug users. There was no significant difference between the unstably housed group as compared to both stably housed and homeless groups (where U= 84.0, z=-1.406 and p>.05 and where U= 90.5, z=-1.149 and p>.05 respectively).

Post hoc analysis between the housing groups not on psychiatric medication indicated that there was a significant difference between all three groups; stably housed and unstably housed drug users(U= 121.00, z= -2.100, r= - .33 and p <.05), stably housed and homeless drug users (U= 53.000, z= -3.855, r= -.33 and p<.001) and unstably housed and homeless drug users (U= 143.0, z= -2.151, r= -.62 and p <.05). Stably housed drug users had significantly

higher quality of life than unstably housed, who in turn scored significantly higher than homeless drug users.

Table 4.2: Difference in Quality of life on basis of psychiatric medication.

Psychiatric Medication	Housing status	N	Mean Rank	Sum of Ranks
No Medication	NHP	18	42.83	771.0
	HP	22	31.50*	693.0
	NFA	21	20.33*** ≠	427.0
On Medication	NHP	17	31.32	532.4
	HP	14	24.04	336.5
	NFA	17	18.06*	307.0

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless. *p<0.05, ** p< 0.01 and *** p<0.001 (Compared to NHP) and ≠ p<.05 (Compared to HP).

Physical Health

Independent t test indicated that there was significant difference on physical health scores between those on psychiatric medication and those not on medication within the stably housed groups only where t (33) = 2.072, p< .05, where those on medication had lower physical health scores than those not on medication. There was no significant difference on within unstably housed groups t (34) = .888, p> .05, and the homeless groups t (36) = -.441, p> .05 for those on psychiatric medication and those not on medication.

Kruskall-Wallis test indicated no significant difference on physical health scores between the housing groups for those who were on mental health medication (where H (2) = 1.265, p>.05), But there was significant difference on physical health scores between groups who were not on mental health medication (H (2) = 11.881, p< .01).

Post hoc analysis using Mann Whitney U tests for groups not on medication indicated that there were significant differences between stably housed and both unstably housed drug users (U= 121.500, z= -2.096, r= -.33 and p< .05) and homeless drug users (U= 74.500, z= -3.244, r= -.52 and p< .01), where

stably housed drug users scored significantly higher on physical health than the unstably housed and homeless drug users. There was no significant difference between unstably housed and homeless drug users (U= 157.5, z=-1.794 and p>.05).

Table 4.3: Difference in physical health on basis of psychiatric medication.

Psychiatric Medication	Housing status	N	Mean Rank	Sum of Ranks
No Medication	NHP	18	41.61	749.0
	HP	22	30.86*	679.0
	NFA	21	22.05**	463.0
On Medication	NHP	17	26.79	455.4
	HP	14	25.20	353.0
	NFA	17	21.56	366.5

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.
*p<0.05, ** p< 0.01 (Compared to NHP)

Psychological Health

Independent t test indicated that there was no significant difference on psychological health between those on psychiatric medication compared to those not on medication within the stably housed groups t (33) = 1.559, p> .05 , unstably housed groups t (34) = 1.367, p> .05, and the homeless groups t (36) = .217, p> .05.

Kruskall-Wallis H test indicated that there was significant difference in psychological health between the groups for those on psychiatric medication H (2) = 8.759, p< .05 and those not on medication, H (2) =11.638, p <.01.

Post hoc analysis using Mann Whitney U tests for those who are on medication indicated that there was significant difference between stably housed and both unstably housed (U= 56.500, z= -2.561, r= -.46 and p< .05) and homeless drug users (U= 73.500, z= -3.124, r= -.43 and p< .05), where stably housed drug users scored higher on psychological health than both unstably housed and

homeless drug users. There was no significant difference on psychological health between unstably housed and homeless drug users (U= 103.5, z= -.623 and p> .05).

Post hoc analysis of those not on medication revealed that there were significant differences between stably housed and both unstably housed drug users, (U= 115.00, z= -2.264, r= -.36 and p<.05) and homeless drug users (U= 78.500, z= -3.124, r= -.50 and p<.01), where stably housed drug users scored higher on psychological health than both unstably housed and homeless drug users. There was no significant difference on psychological health between unstably housed and homeless drug users (U= 160.5, z= -1.721 and p>.05).

Table 4.4: Difference in psychological health on basis of psychiatric medication.

Psychiatric Medication	Housing status	N	Mean Rank	Sum of Ranks
No Medication	NHP	18	41.75	751.5
	HP	22	30.43*	669.4
	NFA	21	22.38**	470.0
On Medication	NHP	17	32.38	550.4
	HP	14	21.14*	296.0
	NFA	17	19.38*	329.4

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.
*p<0.05, ** p< 0.01 (Compared to NHP)

Severity of Depression

Independent t tests indicated that there were significant differences on severity of depression between those on psychiatric medication vs those not on medication within the stably housed groups where t (33) = -2.603, p< .05 and unstably housed groups t (34) = -2.204, p< .05. The results indicated that stably housed drug users on medication had significantly higher severity of depression scores than those not on medication, and likewise unstably housed on medication had significantly higher severity of depression as compared to those not on medication. However, there was no significant difference within

homeless groups t (36) = .375, p> .05 for those on medication and not on medication.

The Kruskall Wallis test for depression indicated that there was no significant difference between groups for those who were on psychiatric medication, H (2) = 1.357, p> .05. However, there was significant difference between the groups for those who were not on medication, H (2) = 18.753, p< .001.

Post hoc analysis using Mann Whitney U tests for the groups not on medication indicated that there were significant differences between stably housed and both unstably housed drug users (U= 97.000, z= -2.756, r= -. 44 and p< .01) and homeless drug users (U=41.500, z= -4.169, r= -.67 and p<.001), where stably housed drug users had significantly lower scores on severity of depression as compared to unstably housed and homeless drug users. There was no significant difference on the severity of depression between the unstably housed and homeless drug users (U=152.5, z= - 1.912, and p> .05)

Table 4.5: Difference in severity of depression on basis of psychiatric medication.

Psychiatric Medication	Housing status	N	Mean Rank	Sum of Ranks
No Medication	NHP	18	17.19	309.4
	HP	22	32.02*	704.4
	NFA	21	41.76***	877.0
On Medication	NHP	17	21.62	367.5
	HP	14	27.43	384.0
	NFA	17	24.97	424.4

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.
*p<0.05, ** p< 0.01 and *** p<0.001 (Compared to NHP)

Severity of Anxiety

Independent t test indicated that there was no significant difference on severity of anxiety between those on psychiatric medication vs those not on medication

within the NHP groups where t (33) = -2.424, p > .05, HP groups t (34) = -1.971, p> .05, and the NFA groups t (36) = .933, p> .05.

The Kruskall Wallis H test indicated that there was no significant difference in severity of anxiety between the groups for those on psychiatric medication, H (2) = 4.492, p>.05. There was significant difference in anxiety between the groups for those not on mental health medication, H (2) = 21.645, p <.001.

Post hoc analysis using Mann Whitney U for the group not on medication indicated that there were significant differences between stably and unstably housed drug users,(U= 114.000, z= -2.295, r= -.36 and p<.05), unstably housed and homeless drug users, (U= 149.500, z= -1.989, r= - .30 and p<.05) and stably housed and homeless drug users, (U= 15.500, z= -4.908, r= -.79 and p<.001). Stably housed drug users scored significantly lower than the unstably housed, who in turn scored significantly lower than the homeless groups on severity of anxiety.

Table 4.6: Difference in severity of anxiety on basis of psychiatric medication.

Psychiatric Medication	Housing status	N	Mean Rank	Sum of Ranks
No Medication	NHP	18	16.69	300.4
	HP	22	31.11*	684.4
	NFA	21	43.14**≠	906.0
On Medication	NHP	17	18.91	321.4
	HP	14	29.00	406.0
	NFA	17	26.38	448.4

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.
*p<0.05, ** p< 0.01 and *** p<0.001 (Compared to NHP) and ≠ p<.05 (Compared to HP).

Perceived Stress

Independent t test indicated that there was no significant difference on perceived stress between those on psychiatric medication vs those not on

medication within the NHP groups where t (33) = -1.526, p< .05, HP groups t (34) = -1.725, p> .05, and the NFA groups t (36) = 1.444, p> .05.

Kruskall-Wallis H test indicated a significant difference in perceived stress between the groups who were on psychiatric medication, H (2) = 7.551, p< .05 and the groups who were not on medication, H (2) = 18.605, p < .001.

Post hoc analysis using Mann Whitney U tests for the groups on medication indicated a significant difference between stably housed and unstably housed drug users only, U=45.500, z= -2.926,r= -.52 and p< .01, where stably housed drug users scored lower than the unstably housed drug users. There was no significant difference between homeless drug users and stably or unstably housed drug users (where U= 107.0, z= -1.295 and p> .05 and U= 90.5, z= -1.134 and p> .05 respectively).

Post hoc analysis for groups not on medication, using Mann Whitney U test indicated significant differences between stably housed and both unstably housed drug users, (U= 102.500, z= -2.606, r= -.41 and p< .01) and homeless drug users (U=40.000, z= -4.215, r= - .67 and p< .001), where stably housed drug users had significantly lower perceived stress than unstably and homeless drug users. There was no significant difference on the perceived stress between the unstably housed and homeless drug users (U=150.0, z=-1.960 and p>.05).

Table 4.7: Difference in perceived stress levels on basis of psychiatric medication.

Psychiatric Medication	Housing status	N	Mean Rank	Sum of Ranks
No Medication	NHP	18	17.42	313.5
	HP	22	31.68**	697.0
	NFA	21	41.93***	880.5
On Medication	NHP	17	17.97	305.4
	HP	14	31.79**	445.0
	NFA	17	25.03	425.5

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.
*p<0.05, ** p< 0.01 and *** p<0.001 (Compared to NHP).

4.6.5 Difference between housing status groups on their health and well-being based on OST medication.

Of the 109 participants in this study, 80 SUD patients (73%) reported being on prescribed OST medication whereas 29 SUD patients (27%) reported not being on any form of OST medication. Owing to the small sample size, those not on OST were excluded from the analysis for this study.

Quality of Life scores

The Kruskall-Wallis test indicated that there was significant difference in quality of life scores between drug users on OST medication, H (2) = 17.486, p<.001.

Post hoc analysis using Mann Whitney U tests for those on OST medication indicated that there was a significant difference between the homeless and stably housed drug users (where U= 224, z= -2.529, r= -.34 and p<.05 respectively) and the homeless and unstably housed drug users (where U= 89.500, z= -4.240, r= -.61 and p<.001). Homeless drug users indicated significantly lower QoL than both stably housed drug users or unstably housed drug users. There was no significant difference between stably and unstably housed drug users (where U= 285.0, z= -1.691 and p> .05).

Table 4.8: Difference in quality of life on basis of OST medication.

OST Medication	Housing status	N	Mean Rank	Sum of Ranks
On Medication	NHP	25	53.00	1325.0
	HP	31	41.98	1301.3
	NFA	24	25.56* ≠ ≠ ≠	613.4

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.
. *p<0.05, (Compared to NHP) and ≠ p<0.05, ≠ ≠ p< 0.01 and ≠ ≠ ≠p<.001 (Compared to HP).

Physical Health scores

The Kruskall-Wallis test indicated that there was a significant difference in physical health scores between drug users on OST medication, H (2) = 9.570, p<.01.

Post hoc analysis using Mann Whitney U tests for those on OST medication indicated that there were significant differences between the homeless drug users and both the stably housed and the unstably housed drug users (where U= 156.5, z= - 2.888, r= -.326 and p<.01 and U= 230.0, z= -2.424, r= -.412 and p<.05 respectively). Homeless drug users indicated significantly lower physical health scores that both stably housed drug users or unstably housed drug users. There was no significant difference between stably housed and unstably housed drug users (where U= 342, z= -.746 and p> .05).

Table 4.9: Difference in physical health on basis of OST medication.

OST Medication	Housing status	N	Mean Rank	Sum of Ranks
On Medication	NHP	25	48.04	1201.0
	HP	31	43.63	1352.5
	NFA	24	28.60*≠≠	686.4

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.
*p<0.05, ** p< 0.01 (Compared to NFA) and ≠ p<0.05, ≠ ≠ p< 0.01 (Compared to HP)

Psychological health scores

Kruskall-Wallis test indicated that there was a significant difference in psychological health between the groups for those on OST medication, H (2) = 11.911, p<.01.

Post hoc analysis of those on OST medication revealed that there was significant difference between stably housed and both unstably housed drug users, (U= 260.00, z= -2.121, r= -.28 and p<.05) and homeless drug users, (U= 140.00, z= -3.216, r= -.46 and p <.01). Stably housed drug users had significantly higher psychological health scores than both unstably housed and

homeless drug users. There was no significant difference between unstably housed and homeless drug users (where U= 262, z= -1.878 and p> .05).

Table 4.10: Difference in psychological health on basis of OST medication.

OST Medication	Housing status	N	Mean Rank	Sum of Ranks
On Medication	NHP	25	52.00	1300.0
	HP	31	39.94*	1238.1
	NFA	24	29.25**	702.0

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless. . *p<0.05, ** p< 0.01 and *** p<0.001 (Compared to NHP)

Severity of depression

The Kruskall-Wallis test indicated that there was a significant difference in the severity of depression for the groups who are on OST medication H (2) = 11.539, p<.01.

Post hoc analysis using a Mann Whitney U test for those on medication indicated significant differences between stably housed and both unstably housed drug users, (U= 260.00, z= -2.107, r= -.28 and p<.05) and homeless drug users, (U=137.50, z= -3.257, r= -.47 and p<.01), where stably housed had significantly lower depression as compared to both unstably housed and homeless drug users. There was no significant difference between unstably housed and homeless drug users (where U= 274, z= -1.658 and p> .05).

Table 4.11: Difference in severity of depression on basis of OST medication.

OST Medication	Housing status	N	Mean Rank	Sum of Ranks
On Medication	NHP	25	28.90	722.5
	HP	31	41.47*	1285.5
	NFA	24	51.33**	1232.0

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless. *p<0.05, ** p< 0.01 and *** p<0.001 (Compared to NHP)

Severity of anxiety

The Kruskall-Wallis test for anxiety indicated that there was a significant difference between the groups who were on medication, H (2) = 16.608, p <.001.

Post hoc analysis using Mann-Whitney U for those on medication revealed that there were significant differences between stably housed and both unstably housed drug users, (U= 246.0, z= -2.338, r= -.312 and p<.05) or homeless drug users, (U= 95.5, z= -4.104, r= -.59 and p <.001). Stably housed drug users indicated significantly lower severity of anxiety than both unstably housed and homeless drug users. There was no significant difference between unstably housed and homeless drug users (where U= 262.5, z= -1.865 and p> .05).

Table 4.12: Difference in severity of anxiety on basis of OST medication.

OST Medication	Housing status	N	Mean Rank	Sum of Ranks
On Medication	NHP	25	26.66	666.5
	HP	31	41.53*	1287.4
	NFA	24	53.58***	1286.0

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.
*p<0.05, ** p< 0.01 and *** p<0.001 (Compared to NHP)

Perceived stress

Kruskall-Wallis H test indicated a significant difference in perceived stress between the groups who were on OST medication, H (2) = 9.859, p< .01.

Post hoc analysis using Mann Whitney U tests for the groups on medication indicated a significant difference between stably housed and both unstably housed (U=253.5, z= -2.213, r= -.29 and p< .05) and homeless drug users (U= 160.5, z= -2.798, r= -.40 and p <.01). Stably housed drug users had significantly lower stress scores than both unstably housed and homeless drug users. There was no significant difference between homeless drug users and unstably housed drug users (where U= 331, z= -.697 and p> .05).

Table 4.13: Difference in perceived stress levels on basis of OST medication.

OST Medication	Housing status	N	Mean Rank	Sum of Ranks
On Medication	NHP	25	29.56	739.0
	HP	31	43.50*	1348.5
	NFA	24	48.02**	1152.4

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.
*p<0.05, ** p< 0.01 and *** p<0.001 (Compared to NHP)

4.7 Discussion

The aim of study 2 was to understand if drug users in different housing circumstances differed in their physical health, psychological health and quality of life. The results indicate that severity of housing problems was significantly related to the perceived quality of life in drug users, with homeless drug users reporting significantly lower QoL than unstably housed users, who in turn reported significantly lower QoL than stably housed users.
Furthermore, the data indicates that homeless drug users with the most severe housing problems had significantly poorer physical and mental health than stably housed drug users. However, drug users with less severe housing problems experienced significantly poorer mental but not physical health problems as compared to stably housed drug users. These results are further supported by the data indicating that the participant's self-reported satisfaction with accommodation status was positively related to QoL, physical and psychological health but negatively correlated with severity of anxiety, depression, and stress. Interestingly, further analysis revealed that, of all the drugs measured, the amount of opiate use was the only significant predictor of quality of life and both physical and mental health in the studied sample of drug users.

Additionally, within the housing categories, the comparison of drug users on psychiatric medication vs. those not on medication provided some interesting results. Analysis of drug users who were not prescribed psychiatric medication indicated almost identical results to those reported for the overall results mentioned above, with the homeless and unstably housed drug users reporting significantly poorer QoL, physical and mental health than the stably housed users. However, for those on psychiatric medication, the general measure of psychological health was the only measure where any level of housing problems indicated significantly poorer scores as compared to stably housed drug users. Interestingly, for those on medication, only the homeless drug users had significantly poorer QoL as compared to stably housed drug users. On stress, only the unstably housed had significantly higher stress than

the stably housed drug users. Interestingly, the comparison within the housing groups on health and QoL indicated that stably housed drug users on psychiatric medication reported poorer QoL, physical health and severity of depression as compared to stably housed drug users not on psychiatric medication.

The results of the analysis comparing the housing groups on QoL and health on the basis of OST medication indicated similar results to the larger group data. Those not prescribed OST were not analysed, owing to a small sample size. Analysis of the health and well-being of drug users on OST indicated that despite prescribed OST medication, homeless drug users reported significantly poorer QoL and physical health compared to both unstably and stably housed drug users. Analysis of all measures of psychological health revealed that both the homeless and unstably housed drug users reported significantly poorer psychological health and worse outcomes in depression, anxiety and stress than the stably housed drug users.

4.7.1 Quality of Life

It has been suggested that the focus in addiction research tends to be on socially desirable outcomes (i.e., reduction in drug use and crime) as indicators of improvement rather than outcomes that are important for the drug users (i.e., QoL or satisfaction with treatment) (De Maeyer et al., 2009; Smith and Larson, 2003; Strada et al., 2017). Research among SUD patients acknowledge that, along with being an indicator of well-being, QoL is a significant indicator of treatment adherence and drug treatment outcomes (Strada et al., 2017; Laudet, 2011), underlining the value of assessing QoL among SUD patients. The result of the current study found that any level of deterioration in housing conditions was indicative of significant deterioration in QoL scores. Homeless drug users reported significantly lower QoL compared to both unstably and stably housed drug users and unstably housed drug users indicated significantly poorer QoL than stably housed drug users. It is possible that the lower QoL in the unstably housed group was related to high levels of uncertainty attributed to their environmental (or housing) circumstances as compared to those in stable housing conditions. It is possible that many

unstably housed drug users were living with rat-infestation, risk of violence, insecure housing agreements or in cold, damp conditions none of which would be conducive to health or satisfaction with life. The findings of the current study demonstrate the importance of studying the needs of unstably housed drug users, with clear differences in their perceived QoL possibly indicative of a poorer sense of well-being and social satisfaction (as defined by 'ability to enjoy life, get along with friends and family' in TOPS questionnaire, Marsden et al., 2008) as compared to stably housed counterparts.

Kelly et al. (2018) suggested that drug users with low QoL scores reported highest psychological distress and substance use severity as compared to drug users with higher QoL scores, both of which are indicative of poor outcomes in SUD treatment (Kelly et al., 2018). The results highlight the need for consideration of QoL in SUD treatment, and significance of differentiating between the needs of the unstably housed and stably housed drug users. This was evidenced by the results of the current study which found that higher satisfaction with accommodation status was significantly related to higher QoL, and better physical and psychological health. Additionally, greater satisfaction with accommodation status was significantly related to lower severity in anxiety, depression and levels of stress. The findings indicate that satisfaction with accommodation status could be utilised as an indicator of health and well-being in SUD patients, encouraging further research in this area. Perhaps not surprisingly, the findings of the current study indicate that housing circumstances are associated with QoL for drug users, highlighting that it is important to study not only homelessness but also less severe housing problems as a threat to drug users' perceived well-being. As far as is known, this is the first UK based study to identify the difference between the housing groups on quality of life among unstably housed drug users.

Interestingly, the overall findings of the current study are similar to the findings for those not on psychiatric medication, where deterioration in housing indicated deterioration in QoL. Importantly, despite being housed, unstably housed drug users had significantly lower QoL scores than stably housed drug users. It is possible that not being on any psychiatric medication (such as anti-

depressants or anti-anxiety medication) may reflect unmet psychological problems, which in turn is strongly associated with QoL (Strada et al., 2017). Once again this highlights the importance of understanding this group of drug users who are neither homeless nor stably housed and to recognise that their needs are different from the stably housed in terms of QoL. However, owing to a small sample the results need to be interpreted with caution.

Further, comparison between the housing groups for those on psychiatric medication indicated that only the homeless drug users had significantly lower QoL scores than stably housed drug users. It is possible that despite being on prescribed psychiatric medication, homeless drug users experienced significant barriers to well-being and meaningful social connections as compared to those in stable housing. It is also worth considering, that for many homeless individuals adhering to medication, remembering doses or appointments is a challenge that would impact on the efficacy of medication. Comparison within the individual housing groups on and not on psychiatric medication revealed that stably housed drug users on medication had poorer QoL than stably housed not on medication. The design of the current study did not gather elaborate information about the duration that participants had been prescribed the psychiatric medication, dosage details or whether they were actually taking it as recommended. The consideration of these factors would have possibly added variance to the data as some medication can have a delayed onset of action, whilst tolerance may have developed to other medication. Once again, the results need to be interpreted with caution owing to a small sample size. The results recommend the need for further investigation in a future study with a larger sample.

A large proportion (73%) of the sample for the current study was prescribed OST medication, so it is not surprising that the investigation of differences on QoL indicated nearly similar results to the larger group data where homeless drug users reported significantly lower QoL than stably housed drug users. Additionally, homeless drug users reported significantly lower QoL than unstably housed drug users.

It is not surprising that the homeless drug users indicated the lowest score on QoL, taking into account the challenges experienced during homeless living. It is likely that drug users residing in homeless arrangements and unpredictable conditions might not feel able to enjoy their lives or socially connect with others as compared to those who were in stable housing conditions. The findings also raise concerns about the efficacy of OST medication on improving the overall well-being in drug users, especially those who are homeless or in precarious housing circumstances.

Although drug treatment services cater to the treatment of several illicit substances, the most pressing concern for most services is opiate addiction. This approach is supported by the findings from the current study that among all the illicit substances and alcohol, opiates were the only significant predictor of QoL, physical health, psychological health, depression, anxiety and stress. This reinforces opiate use as one of the most problematic substances and its association with comorbid psychiatric disorders and physical health problems (Marsden et al., 2000; Rosen et al., 2008).

4.7.2 Physical health

Homeless drug users report significant amounts of physical health problems. Homeless living can increase risk of exposure to infections and aggravate already existing medical problems (Crisis, 2021; Public Health England, 2016; Klee and Reid, 1998a; Kemp et al., 2006). It is not surprising, therefore, that the results from the current study indicated that homeless drug users report significantly poorer physical health than stably housed drug users. The results of the current study align with the findings from Krupski et al. (2015), who suggested that homeless drug users, despite reporting fewer chronic health problems than the housed drug users, utilised emergency services more intensively and at higher costs than housed drug users. The researchers interpreted the findings to suggest that higher use of emergency services was indicative of unaddressed health problems, and poorer access to community clinics. In the UK, access to a GP often requires a fixed address, the funds to travel to the clinic, access to clean clothes to attend the appointment and the

ability to remember the appointment, all of which are challenging tasks for a homeless individual. Additionally, it is possible that the need to access drugs either for self-medication for aches and pains, sleep problems, and psychological stressors (Klee and Reid, 1998b; Khantzian, 1985), or to escape from a negative withdrawal state leaves homeless drug users with unaddressed physical health problems. Neale (2001) suggests there is a significant association between unaddressed physical health problems and homelessness where untreated physical health problems can lead to loss of employment, and detrimentally influence finances, social relationships and housing circumstances.

Comparison between the housing groups on the basis of psychiatric medication indicated that for drug users not on medication any level of housing problems (unstably housed and homeless), was indicative of poorer physical health than stably housed drug users. Although causality cannot be inferred from the current study, it is possible that unstable or problematic housing was a contributing factor in the poor physical health of unstably housed drug users. There is previous evidence to suggest that living in poor conditions with no heating or damp can cause physical health problems. Interestingly, the results also indicated that within the stably housed group, drug users prescribed psychiatric medication reported significantly poorer physical health than those who were not prescribed medication. This is an enlightening finding, which suggests that stably housed drug users on prescribed psychiatric medication may have additional physical health needs, which are potentially not addressed or prioritized by health services. It is possible that drug users, especially those diagnosed with mental health problems, may overlook or ignore physical health needs (Klee and Reid, 1998b), emphasizing the need for services to offer greater support to drug users on psychiatric medication to prevent further deterioration in their overall health.

Further, although the overall findings of comparison between housing groups prescribed OST were similar to the larger group data findings, physical health was an exception. Specifically, homeless drug users reported significantly poorer physical health than both stably and unstably housed drug users. The

results indicate that having a roof of some kind was better than none at all when comparing the physical health of drug users. The results may also draw attention to the fact that despite having access to treatment, which includes health checks along with substitute medication, homeless drug users continued to experience greater physical health problems than housed drug users.

4.7.3 Psychological health

Although there is consensus that a large proportion of homeless drug users have co-occurring psychological problems (Black, 2020; Krupski et al., 2015; Kemp et al., 2006; Klee and Reid, 1998b), the psychological health of drug users in unstable housing remains unknown.

The results of the current study indicated that drug users in both homeless and unstable housing conditions reported significantly poorer psychological health as compared to drug users in stable housing. Contrary to findings by Eyrich-Garg et al. (2008) where 'marginally' housed drug users differed from literally homeless on mental health problems, the current study found both homeless and unstably housed drug users were similar on mental health. The current findings concur with Krupski et al. (2015), which reported that homeless drug users experienced greater severity in mental health problems as compared to housed drug users. This could be due to the link between mental health and homelessness, where homeless drug users often experience loneliness, shame, anxiety, paranoia, depression and suicidal ideation (Klee and Reid, 1998a, 1998b). However, many homeless drug users resort to self-medicating with drugs rather than accessing professional support to address the psychological problems (Khantzian, 1985; Klee and Reid, 1998b; Kemp et al., 2008). This is a concern where poor psychological health is associated with more problematic drug use and homelessness, thus sustaining the viscous cycle of homelessness, drug use and poor psychological health (Cornes et al., 2018).

More importantly, the results of the current study indicate that despite being housed, unstably housed drug users reported significantly poorer psychological health than drug users in stable housing. It has been suggested that poor psychological health may predate homelessness (ALMA, 2019; Kemp et al., 2006), where psychological problems have been associated with increasing the probability of becoming 'literally' homeless. Johnson and Chamberlain (2011) suggest that temporarily sheltered drug users with mental health problems were more likely to be troubled and harassed by other residents, turning to rough sleeping to avoid confrontations.

Furthermore, the findings of the current study indicated that the homeless and unstably housed groups reported significantly greater severity of anxiety, depression and perceived stress levels than stably housed drug users. Although there are some studies that have found anxiety and depression in patients in SUD treatment (Delgadillo et al., 2012) or in homeless drug users (Klee and Reid, 1998b), there seem to be no other studies that investigate these variables in unstably housed drug users. The results of the current study emphasise the need to investigate the needs of those with unstable housing, where previous research has identified 'unstably housed' or 'marginally housed' drug users as the 'at risk' of literal homelessness (ALMA, 2019; Public Health England, 2016). Living in unstable, problematic housing (such as risk of exposure to violence or with other drug users) cannot be conducive to experiencing psychological well-being. It is also noteworthy that unstably housed individuals may feel a greater sense of loss of control, as they are unable to abandon the house for fear of being classed as 'deliberate homelessness'. In the UK, current policies restrict individuals who abandon a house deliberately (for reasons such as damp, cold or rat-infestation) from being prioritized for re-housing, with the risk of domestic violence being the only exception to this case. This implies that many drug users in unsuitable, unstable housing often choose between continuing to live there or become homeless. Reports have suggested that problematic housing circumstances such as damp, risk of health hazards or exposure to violence is a significant indicator of future homelessness (Public Health England, 2016), when the tolerance and patience of dwellers eventually wears out. The report by Public

Health England (2016) further suggests that only assessing the psychological needs of drug users who are either homeless or stably housed would prevent opportunities to improve outcomes for those who were not homeless but resided in conditions that could not be considered ‘stable and suitable housing’.

The current study extends the knowledge about psychological health by virtue of utilizing more nuanced measures of psychological health (such as severity of anxiety, depression and stress measures), which indicated that residing in unstable, problematic housing or homeless circumstances was detrimental to the psychological well-being of drug users.

Interestingly, the results on comparison between the housing groups on health and well-being on the basis of psychiatric medication indicated that, for those prescribed medication, the general measure of psychological health was the only measure where both homeless and unstably housed drug users were significantly worse off than stably housed drug users. Comparison between the housing groups prescribed psychiatric medication, on health and well-being indicated similar results to the overall findings, where homeless and unstably housed drug users reported significantly poorer psychological health than the stably housed users. Overall, the results suggested that being prescribed psychiatric medication eradicated the group differences on psychological health between the drug users, but a comparison within the individual housing groups indicated otherwise. The comparison within each housing group (i.e., NHP, HP and NFA) for those prescribed psychiatric medication and those not prescribed medication indicated that there was no difference in the psychological health of drug users overall, with the exception of depression. Both stably and unstably housed groups prescribed psychiatric medication had significantly higher depression than stably and unstably housed groups not prescribed medication. It is possible that there was some effect of psychiatric medication on the health outcomes but the results need to be interpreted with caution owing to a small sample size.

Whilst the prescribing of OST medication is often considered as the standard treatment for opiates addiction, its efficacy on improving symptoms of depression and stress in SUD patients remains inconclusive (Maremmani et

al., 2019; Hassan et al., 2017). Results of the current study found that where despite being prescribed OST medication, both homeless and unstably housed drug users indicated significantly poorer psychological health with higher levels of stress and greater severity in anxiety and depression than stably housed drug users. The finding may suggest that poorer environment and living conditions possibly negated the benefits experienced from OST medication. Conversely, it is also possible that precarious and unsuitable living conditions might prevent drug users from persevering with their OST treatment or taking the best advantage of treatment such as access to health checks and psychological interventions, when fulfilling basic necessities such as food and shelter which often takes precedence over medication and appointments.

4.8 Conclusion

The aim of the current study was to investigate the link between housing status, QoL and health among current drug users, with a view to provide greater insight about the previously overlooked group of unstably housed drug users. The findings from the current study demonstrate that both homeless and unstably housed drug users experienced significant disadvantage as compared to stably housed counterparts with regards to their overall wellbeing, with deterioration in housing conditions significantly associated with deterioration in QoL. Contrary to expectations, the overall results indicated that despite having a place of residence, unstably housed drug users were more similar to homeless drug users than stably housed in terms of their psychological health, as indicated by greater severity in anxiety, depression and perceived stress.

The investigation of differences between the groups on QoL and health on the basis of psychiatric medication indicated inconclusive results with recommendations of a future study on a larger sample. The investigation of differences on the basis of OST medication between the three housing groups indicated similar results to the overall larger group data. The findings underscored the disadvantage of both homeless and unstably housed drug users in their overall well-being and health as compared to stably housed drug

users. The results indicated that within the sample studied, greater satisfaction with accommodation status was indicative of higher QoL, physical and psychological health and lower severity of depression, anxiety, and stress. Additionally, the findings indicated that the amount of opiate use was the only significant predictor of quality of life and both physical and mental health in the studied sample of drug users.

The results from the current study highlight the disadvantage experienced by homeless drug users with lower satisfaction with life and worse physical and mental health as compared to stably housed drug users, suggesting a need for more effective treatment modalities that can cater to their complex and often-unpredictable lifestyle.

Prior research has shown that deterioration in QoL and psychological well-being can predict unfavourable drug treatment outcomes and future homelessness. Considering these findings, the results from the current study recommend the use of targeted interventions to improve the health and wellbeing of unstably housed drug users, and to prevent their decline into complete homelessness.

CHAPTER 5: The association between drug users' housing status with their motivation to change.

5.1 Introduction

Drug users often experience a myriad of problems in social, psychological and economic aspects of their life. Research suggests that effective and successful drug treatment is a significant factor that can transform living conditions for drug users (Neale, 2001; Public Health England, 2016) by providing a transition from an impoverished life towards improved health, abstinence, employment and possible reintegration into the community. As discussed in chapter 1, there are several important factors that contribute to success in treatment including motivation to change and the belief in one's capability to make the change.

Motivation to change is the willingness or readiness to make a change in the current behaviour (e.g., drug use) towards a desired behaviour (e.g., reduction in frequency of use or abstinence from use). Previous studies have emphasised that motivation is a critical element that influences whether drug users commence, engage or participate in treatment (DiClemente, 1999). A higher level of engagement in treatment suggests a greater commitment to change, greater personal transformation and an increased likelihood of sustained change after discharge from treatment (Garnick et al., 2012). Another benefit of assessing motivation or readiness is to be able to identify patients at risk of dropping out of SUD treatment, where individuals with lower motivation scores were twice as likely to drop out of services than those with high motivation scores (De Leon, 1994).

Within addiction services, motivation to change is best conceptualised within the Transtheoretical Model of change (TTM, Prochaska and DiClemente, 1992), a commonly utilised theoretical model to monitor change in the field of addiction (Sharma and Atri, 2006; Sutton, 2001; Prochaska , 2020). The TTM model postulates that individuals are at different stages in their motivation to change and the goal of treatment is to move them through the stages towards

their recovery goal (Prochaska and DiClemente, 1992). The original model had four stages but the newer version has five stages of change (Prochaska et al., 1992) which are listed below:

i. Precontemplation- is the stage where individuals indicate a lack of awareness about the problem behaviour, underestimate the negative consequences of the behaviour, and therefore do not perceive the need to change.
ii. Contemplation- or ambivalence is the stage where individuals are more aware of the problem and often begin to alternate between wanting to change and reluctance to change.
iii. Preparation- is the stage just prior to action where individuals are more determined to do something about the problem behaviour. The desire for making a change is stronger and more pertinent than being passive about the change.
iv. Action- is the stage where individuals have already taken steps towards the desired behaviour change. Often individuals will start to notice the benefits of change which in turn sustains the behaviour leading into maintenance stage.
v. Maintenance- is the last stage in the model where the desired behaviour change is sustained.

The individual stages have been elaborately explained in chapter 1, section 1.6.5. There are multiple methods to assess motivation to change but for the purpose of this study motivation to change is assessed by Stages of Change, Readiness and Treatment Eagerness Scale (SOCRATES) measured by recognition, ambivalence and taking steps as elaborated in chapter 1, section 1.6.5 and in section 5.3.4 of the current chapter. Recognition and ambivalence are representations of being in the precontemplation and contemplation stages (e.g., low recognition for the problem suggests a pre-contemplative stage) whilst taking steps represents being in the action stage. It has been suggested that pre-contemplators and contemplators often stay stuck between a lack of awareness about the problem and uncertainty about their efficacy to change (Marlatt et al., 1996 as cited in Bandura and Watts, 1996).

One of the benefits of identification of motivation levels is that it can influence the outcome of addiction treatment, where the identification of the motivation levels of a drug user informs drug services about specific interventions that are best suited to the individual (i.e., as motivational interviewing therapy or motivational enhancement therapy) to enhance engagement with services (Brown & Miller, 1993; Rollnick et al., 2008). A study by Leontieva et al., (2005) on alcohol users indicated that the effectiveness of motivational enhancement therapy varied depending on the individual's readiness to change. They study found that individuals who were in the action stage (Prochaska and DiClemente, 1992) and received motivational intervention were more likely than individuals who were in the precontemplation stage to display a reduction in their alcohol use (Prochaska and DiClemente, 1992). Thus, emphasising that the accurate identification of the readiness to change stage was significant to the treatment journey. However, one of the challenges in this process is that progress between the stages is not always linear, and individuals may move back and forth between the different stages. Furthermore, readiness to change can be influenced by several factors such as health status, drug use, lack of stable housing and self-efficacy as elaborated in Ch. 1 sec 1.5.6 and discussed further in Ch. 6.

Self-efficacy refers to an individual's perceived capability to perform a target behaviour (Bandura, 1977; 1986; 2006) or their belief in their ability to pursue that behaviour. In other words, self-efficacy is the confidence or belief about one's ability to achieve a particular goal (e.g., successfully completing drug treatment), where the goal is a behaviour that one is motivated to pursue (e.g., abstaining from drug use). Bandura and Locke (2003) suggested that self-efficacy is a robust predictor of perseverance in the face of challenges such as resisting the temptation to use drugs. This was emphasised by a study by Torrecillas et al. (2015) on 181 participants in Spain, which revealed that self-efficacy was inversely related to the quantity of drugs consumed. More specifically, higher self-efficacy scores were indicative of a lower probability of consuming drugs in the study.

Self-efficacy also plays an important role in relapse where in the event of a slip or lapse, individuals with low self-efficacy were more likely to deteriorate to

complete relapse as compared to highly self-efficacious drug users who would regard the event as a temporary slip-up (Bandura, 1986). It is possibly for this reason that most relapse-prevention programmes in addiction services utilise techniques such as Motivational Interviewing, a person-centred approach that focuses on enhancing motivation to change addictive behaviour by resolving ambivalence and increasing self-efficacy, where enhancing self-efficacy can enhance motivation to maintain abstinence. On the other hand, studies on alcohol use disorders suggest that longer periods of abstinence are linked with increase in self-efficacy. To elaborate, the success experienced by maintaining abstinence from alcohol despite obstacles increased the level of self-efficacy in individuals with alcohol use disorders (Litt et al., 2018; Muller et al., 2019). However, there remains limited understanding of the possible differences in self-efficacy in drug users who are in varying housing situations.

Similar to self-efficacy, there is limited information on how housing circumstances may affect motivation to change in drug users. Limited studies on homeless drug users suggests that homeless individuals are less likely to engage with drug treatment as compared to housed drug users (Acevedo et al., 2012), but there are no studies about engagement levels in unstably housed drug users. Other studies (Peterson et al., 2016) have acknowledged that the social circumstances (e.g., housing) of drug users is generally ignored when designing motivational interventions which could have a significant impact on the motivation of drug users in treatment. A study by Velasques et al. (2000) on 100 homeless individuals accessing homeless shelters in USA, suggested that motivation to change varied on the basis of substance of use. The study found that individuals who used both drugs and alcohol reported higher precontemplation about change than those who only used drugs. The study further suggested that the majority of participants were in the precontemplation and contemplation stages about their substance misuse possibly indicating low motivation to change. The study did not compare these findings to any other housing groups but suggested a greater need among homeless individuals to enhance their motivation to change. A study by Upshur et al. (2014), also conducted in the USA, focused on women to find that women who had experienced 15 or more days of homelessness placed a higher

importance to changing their drug use as compared to those who reported fewer than 15 days of homelessness. Although the study was specifically focused on women, it highlighted that longer period of homelessness increased the motivation for drug treatment. It is possible that more days of homelessness increased the risk of exposure to problems associated with homeless living, such as risk of violence and assault, and the difficulty of meeting basic needs such as food and shelter (Collins and Slesnick, 2011).

However, not all drug users are homeless, and many reside in variable housing circumstances. The studies mentioned above were mainly based within a US population where the needs and challenges of the population differ significantly from those of the UK population. More importantly, findings from Ch. 3 suggested that homeless drug users reported greater dependency and drug problems than stably housed drug users. Additionally, findings from Ch.4 indicated that both homeless and unstably housed drug users reported poorer Quality of life (QoL) and psychological health than stably housed drug users. In context of the above findings, greater severity in drug dependence, and psychiatric symptoms and disorders are associated with poor outcomes in SUD treatment such as premature drop-out and relapse post treatment (McLellan et al., 1994; 1996). The findings from study 1 and 2 highlighted the need to identify motivation to change in drug users with problematic housing or no housing as compared to stably housed counterparts. Therefore, this study seeks to enhance our understanding of the relationship between housing status, motivation to change and self-efficacy in drug users.

5.2 Research objectives

The objectives of this study are to assess levels of motivation to change and self-efficacy in substance users based on their housing status groups. There were three mutually exclusive housing categories:

No housing problems or stably housed

Housed with problems or unstably housed

No fixed abode or homeless.

The definition for each category is elaborated in chapter 2.

Objective 1: To investigate if there is there a difference between housing groups on the readiness to change as measured by recognition, ambivalence and taking steps.

Objective 2: To investigate if there is a difference between housing groups on levels of self-efficacy.

Objective 3: To assess if there is a difference in readiness to change between the three housing groups on the basis of those who were on psychiatric medication vs those not on psychiatric medication.

Objective 4: To assess if there is a difference in self-efficacy levels between the three housing groups on the basis of those who were on psychiatric medication vs those not on psychiatric medication.

5.3 Method

5.3.1 Study Design

The study employed a between-subject, cross sectional design to assess differences in readiness to change and self-efficacy in drug users in different housing conditions (i.e., stable housing, unstable housing or homelessness). Eligible participants were assigned to one of the three mutually exclusive housing groups based on the initial screening questions about their accommodation and drug use (Appendix 1.3).

The between subjects' variables for the study were:

Exposure variable: housing status in the last 4 weeks which has three levels; stably housed or no housing problems (NHP), unstably housed or housing problems (HP), or homelessness or no fixed abode (NFA).

Outcome variables: Readiness to change (which consisted of Recognition, Ambivalence and Taking steps) and General Self-Efficacy.

5.3.2 Study sample

The sample consisted of 91 drug users who were accessing the drug treatment at Forward Leeds. The participants identified as having a mean age of 42.29 years (range 23-61 years). The sample consisted of 76% males and 24% females. On ethnicity, the sample identified as white-British (88%), followed by mixed race (4%), not disclosed (4%), Asian (2%) and Black (1%).

Forward Leeds is a city-wide drug and alcohol service which provides both structured (i.e., pharmacological, and psychosocial drug treatment) and unstructured (such as harm reduction or needle exchange) services to SUD patients. Details of Forward Leeds and the services offered are presented in Chapter 2 Section 2.3.4. Unlike studies 1 (Ch.3) and 2 (Ch.4), all participants in this study were accessing structured treatment for SUD disorders and were on prescribed OST medication.

5.3.3 Inclusion and Exclusion

Complete details of the inclusion and exclusion criteria for the current study are presented in Chapter 2 (section 1.2). All individuals accessing or not accessing drug treatment who identified themselves as a current substance misuser and satisfied the inclusion criteria were eligible to participate. Drug users with severe psychopathological conditions (such as diagnosed with schizophrenia, psychosis or personality disorders), and high risk of violence were excluded as were those who identified alcohol as their primary drug of use. Prior to their recruitment for the study, all participants were screened for their eligibility for the study, i.e., aged 18 yrs. or above, illicit drug use as primary drug of use, current illicit drug use within the last 6 weeks (see Appendix 1.3). An addition to the inclusion and exclusion criteria was the addition of COVID-19 restrictions. As a health care provider working primarily with vulnerable patients, Forward Leeds did not allow individuals with symptoms of COVID-19 to access the premises. Therefore, individuals who had symptoms, or were isolating were offered the option of participating either via phone or at a later date based on eligibility.

5.3.4 Measures

The data collection comprised of the following questionnaires:

Stages of Change, Readiness, and Treatment Eagerness Scale (SOCRATES, Miller and Tonigan, 1997).

The SOCRATES (Miller and Tonigan, 1997) is a widely used measure for the assessment of readiness to change (Lua et al., 2011). Although originally designed for use with alcohol users it has since been modified for use with illicit drug users. The 19-item questionnaire can be used for self-completion where responses are endorsed on a five-point scale with strongly agree (=5) and strongly disagree (=1). Factor analysis of this scale indicated that it best represented three separate stages of recognition, ambivalence and taking steps as assigned by the Transtheoretical model of change (Prochaska and DiClemente, 1992).

The Version 8 was based on the factor analysis with prior versions using items that most strongly marked each factor. The 19-item scale scores show a strong relation to the longer 39 item scale for Recognition (r=.96), Taking steps (r=.94) and Ambivalence (r=.88). Miller and Tonigan (1997) report good test-retest reliability and internal consistency for each of the three measures

The SOCRATES scales utilize continuous variables such as recognition, ambivalence and taking steps (Miller and Tonigan, 1997), where recognition assesses the precontemplation and preparation stages, ambivalence reflects the contemplation stage and taking steps assesses the action stage of the Trantheoritical model of behaviour change (Napper et al., 2008; Prochaska and DiClemente, 1992). It has been observed by clinicians in the field of addiction that the interpretation of the variables is best done in relation to one another rather than in isolation (e.g., low recognition and high ambivalence).

Recognition: There are seven statements to assess recognition with a scoring range between 7-35 (SOCRATES scoring sheet, Appendix 1.8). High scorers (with a score of 35) on recognition are able to acknowledge that they have a problem, express a desire to change the problem behaviour and perceive that harm will continue without change. On the other hand, low scorers (30 and below) on the scale deny that the substance is causing them a problem and

do not express desire for change. Medium scorers on the scale range from 31 to 34. Miller and Tonigan (1997) report good test-retest reliability (Pearson r=.83) and internal consistency (Cronbach Alpha= .60 - .88).

Ambivalence: There are four statements to assess ambivalence with a scoring range between 4-20 (SOCRATES scoring sheet, Appendix 1.8). High scorers (17 and above) question their ability to control substance use by virtue of the amount they are consuming, the effect on other people and their perception of being a problematic substance user. It may also be indicative of uncertainty, openness to reflection or associated with being in the contemplation stage of change. Medium scores on the ambivalence range from 14 to 16. Individuals who are low scorers (13 and below) do not wonder about their use, control, effect on other people or self-perceptions of being a drug addict. Low scorers can be low on ambivalence as an indicator of being aware of the problems caused by drug use (high recognition) or being in a state where they 'know' that they do not have a drug problem (low recognition). A low score in ambivalence is recommended to be interpreted in relation to the recognition stage. Miller and Tonigan (1997) report good test-retest reliability (Pearson r=.94) and internal consistency (Cronbach Alpha= .85 - .95)

Taking steps: There are eight statements to assess taking steps, with a scoring range between 8-40 (SOCRATES scoring sheet, Appendix 1.8). Individuals with high scores (36 and above) are already making steps towards behaviour change and notice positive outcomes from these changes. It is suggested that a high score is indicative of successful change. Medium scores on taking steps range from 31 to 35. Low scorers (30 and below) have not made changes and are not involved in activities to address the substance use. Miller and Tonigan (1997) report good test-retest reliability (Pearson r=.93) and internal consistency (Cronbach Alpha= .83 - .96)

The SOCRATES was deemed as a suitable choice for the measure of motivation based on the consideration of several factors. Primarily, the SOCRATES allows for specification of target behaviour where many measures of motivation have been criticized for failing to specify target behaviour (Belding et al., 2015). Additionally, it has specific versions to

measure the assessment of readiness to change for drug use (SOCRATES-8D) as separate to alcohol use (SOCRATES- 8A). Importantly, taking into consideration that many SUD patients may have poor literacy skills (Degan et al., 2019), the SOCRATES measure is less complicated in its usability and sentence construction as compared to other measures of motivation.

General self-efficacy scale (GSE, Schwarzer and Jerusalem, 1995)

Albert Bandura (1986; 1994) proposed that self-efficacy beliefs influence how individuals think, feel, behave and motivate themselves. Bandura introduced self-efficacy as a domain specific construct, which influenced an individual's perception of their capability to perform particular actions to achieve specific outcomes. Schwarzer and Jerusalem (1995), however, moved away from this perspective towards a more general sense of self efficacy. The General Self-Efficacy scale was thus created by them to evaluate a general sense of perceived self-efficacy based on their coping with daily stressors and adversity in demanding situations (Luszczynska et al., 2005). The GSE is a 10-item self-report instrument that measures general self-efficacy as a prospective and operative construct. Each item is rated from 1 (not at all) to 4 (completely true). Scores ranges from 10-40, with higher scores indicative of higher self-efficacy. The measure does not provide a cut off for high, medium or low scores.

The GSE is a popular scale to measure general self-efficacy, originally developed in Germany, it has since been translated in 28 languages by various co-authors (Schwarzer et al., 2000). The psychometric properties of GSE have been tested across 25 nations, indicating that GSE is a universal and unidimensional construct which indicates meaningful relationship with other psychological constructs (Luszczynska et al., 2005).

Research indicates that self-efficacy has been significant in the field of health behaviours (Bandura, 1997; Ajzen, 1991), as a key determinant in health behaviour (Connor and Norman, 2017), and in predicting outcomes in anxiety disorders, depression, smoking cessation, weight loss and adherence to healthier choices (Schwarzer and Fuchs, 1995). The GSE was selected as an appropriate measure of self-efficacy in line with the research objectives of this study. Unlike other measures, the GSE does not presume abstinence as a

goal or an accomplishment that has already been achieved by drug users or participants in the current study. The primary focus of the current study was not to evaluate motivation for abstinence, but rather motivation for any change to substance use, which could include reduction in substance use. Additionally, it is anticipated that the information on overall perceived self-efficacy will compliment or enhance the understanding of motivation to change in drug users. It will provide insight on why individuals may have higher or lower scores on motivation to change.

One of the better-known strengths of the scale is its universal applicability and its ability to identify self-efficacy on a continuum rather than as present or absent. This delicate nuance is very important in addiction studies where drug users may have variable levels of self-efficacy. The reliability and validity of the GSE has been tested in a variety of samples, indicating an internal reliability ranging between 0.76 and .90, which is indicative of satisfactory reliability using Cronhbach's alpha coefficient (Schwarzer & Jerusalem, 1995)

5.3.5 Ethical Approval

Ethical approval for the study was granted by the Ethics committee at Faculty of Medicine and Health at University of Leeds (ethics reference: PSYC-250 in 2021). Permission for research (Appendix 1.4) with clients accessing Forward Leeds was granted by Humankind charity. This included research on any of the designated sites within Leeds.

5.4 Procedure

To recruit participants, study posters (Appendix 1.1b) and information sheets (Appendix 1.2b) were disseminated to various Forward Leeds staff, including needle exchange workers, outreach workers, group facilitators, specialist housing workers and staff who work with rough sleepers. All staff were requested to pass on the information to potential participants. Participants were recruited from Forward Leeds, including drop-in services, outreach, and harm reduction services. Additionally, drug users who were not accessing structured treatment were also eligible to participate particularly via Forward

Leeds Street outreach teams who engage with individuals not accessing services or treatment.

Owing to COVID-19 restrictions, the researcher was unable to access permission for face-to-face data collection, therefore the data from the questionnaires was primarily collected by a select clinical team including members of the recovery, outreach and harm reduction teams who continued to meet and support drug users across the local area. It was identified and agreed that the staff team at Forward Leeds have an established rapport with the service users and would be able to collect the data from service users. The clinical staff are bound by health and safety regulations and adhere to the guidelines of confidentiality and data protection. The staff who expressed an interest in data collection were provided training via an online forum and supervised by the researcher for the study. They were also advised by the researcher about the screening process, informed consent and questionnaires required for the study. The trained staff were able to assist drug users to complete the questionnaires by reading and ticking responses on the data sheets during the data collection meetings or via telephone. However, it was anticipated that most participants who attended face-to-face appointments would be able to complete the questionnaire without assistance. It was agreed that the researcher would be available to assist the clinical team remotely via phone should the team require assistance.

Importantly, most of the clinicians were experts with specialised training in data gathering including gathering data from drug users for Public Health England as a mandatory part of their job. They are bound by organisational health and safety regulations and adhere to the Forward Leeds standard procedures on confidentiality and data protection, with enhanced criminal records checks ensuring that they are safe to work with vulnerable individuals. More importantly, they have in-depth knowledge and training on asking questions of a sensitive nature (such as drug use behaviour, mental health).

Select clinical staff completed the stages of screening (Appendix 1.3) via phone or as clients attended at the Forward Leeds to recruit interested participants. Those participants (barring those with COVID-19 restrictions) without access to a phone had the option of attending for screening at the

service on the dates and times agreed by staff. If deemed not eligible, personal information was destroyed immediately in a confidential manner. The individuals deemed eligible for the study were given a brief overview of the study and given or read the participant information sheet (Appendix 1.2b) a minimum of 24 Hours prior to data collection, allowing time to make an informed decision about their participation in the study.

On the day of data collection participants were greeted at reception and given an informed consent from to sign (Appendix 1.6) followed by a PIN Generation Form (Appendix 1.5). For telephone interviews, the forms were read out and initialled by the staff collecting the data. All participants were asked to complete the participant data information sheet which consisted of questions about age, gender, race, drug use, mental health and housing status (Appendix 2.6), SOCRATES 8D (Appendix 2.4) and General self-efficacy questionnaire (Appendix 2.5).

The clinical team was aware that the researcher was available via phone for assistance if required. Consistent with standard practice by the Forward Leeds all participants were asked if they would like a member of staff to read the questions and record their responses or if they would like to read and complete the questionnaires by themselves. This was offered because some drug users may have poor levels of literacy, dyslexia, poor eyesight and may find it difficult to read the questionnaires. In most cases drug users were able to read and complete (i.e., tick boxes that apply) the data questionnaires by themselves. The questionnaires were in paper format and the participants were required to tick boxes with a pen/pencil. As anticipated, the data collection took no longer than 15-20 minutes. Participants were only required to complete the forms once.

On completion of the data collection, each participant was entered into a prize draw with a 1st prize of £50 value love-to-shop voucher, a 2nd prize of £25 value love to shop and a 3rd prize of £15 value love to shop voucher which could be redeemed to purchase home or food items.

5.5 Statistical analysis

The data was analysed using SPSS version 26 (IBM Corp, 2016; 2020). All variables were screened for skewness and kurtosis using histogram and basic computation as specified by Tabachnick and Fidell (2001). Data was assessed for homogeneity of variance and normality of distribution prior to statistical analyses.

To assess differences in recognition, ambivalence, taking steps and self-efficacy in the different housing status groups one-way between subjects' ANOVA were conducted. Significant main effects of group were further investigated using post hoc t-tests and adjusted for multiple comparisons using Bonferroni correction. Chi-square tests were utilised to further analyse whether there was a significant association between housing status and reporting high, medium or low scores on each of the measures of motivation to change (recognition, ambivalence and taking steps). A 2 by 3 between-subject ANOVA was utilised to analyse whether there were differences in recognition, ambivalence, taking steps and self-efficacy of participants who were currently taking psychiatric medication vs those not taking medication in each of the housing groups. Participants who did not identify as having a mental health problem (N=18) were excluded from the analysis to ensure a clear distinction between those not on psychiatric medication where there was no need for medication as compared to those not on medication despite having a mental health problem. Due to low response rates, amount and frequency of drug and alcohol use and duration spent in current housing circumstances were omitted from the analysis.

5.5.1 Characteristics of the study sample

The sample comprised of 91 individuals who were accessing services at Forward Leeds and identified as having consumed illicit drugs within the last 4 weeks. There were 62 (68%) males and 29 (32%) females in the study. The majority of study participants reported opiate use (85%) followed by crack (67%), alcohol (37%), cannabis (32%), cocaine (12%) and amphetamine (2%).

All participants reported being in treatment and were on OST medication, 80% were on methadone and 20% on buprenorphine. 83.5% of the sample reported

mental health problems, while 16.5% reported no mental health problems. In terms of psychiatric medication, 38% were on psychiatric medication and 62% reported not being on any psychiatric medication. Table 5.1 presents the characteristics of the participants for the study.

Table 5.1: Characteristics of Participants

Number of Participants	NHP (n=34)	HP (n=26)	NFA (n=31)
Gender Male/ Female	25: 9	15:11	22:9
Opiate users	26 (76%)	21 (81%)	30 (97%)
Alcohol users	9 (26%)	10 (38%)	15 (48%)
Cannabis users	8 (23%)	8 (31%)	13 (42%)
Crack users	20 (59%)	17 (65%)	23 (74%)
Cocaine users	6 (18%)	4 (15%)	1 (3%)
Amphetamine users	0 (0%)	1(4%)	1 (3%)
Opioid Substitute Medication	34 (100%)	26(100%)	31(100%)
Methadone	24 (71%)	24(92%)	25 (81%)
Buprenorphine	10 (29%)	2(8%)	6 (19%)
Mental Health Problems	23 (68%)	24(92%)	28 (90%)
Mental Health Medication users	12 (35%)	13 (50%)	10 (32%)

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.

5.6 Results

5.6.1 Difference in motivation to change in drug users on the basis of their housing status.

Recognition

Analysis of the recognition scores indicated a significant main effect of housing status group ($F (2, 88) = 4.019$, $p<.05$, $\eta^2 = 0.29$). Post hoc analysis using Bonferroni correction demonstrated that homeless drug users had significantly higher recognition than stably housed drug users ($p<.05$). There was no significant difference between the unstably and stably housed ($p>.05$) and unstably housed and homeless drug users ($p>.05$) on recognition as indicated in table 5.2.

Table 5.2: Descriptive statistics of recognition for housing groups.

Measure	NHP (n=34)	HP (n=26)	NFA (n=31)
Recognition: *M(SD)*	27.65(5.33)	29.38(3.64)	30.81(4.13) *

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless. Recognition scores range 7-35. *Note. M*=mean, *SD*=standard deviation, *p<0.05 (Compared to NHP).

Low, medium and high recognition scores in each housing category

Recognition scores obtained by the housing groups was split by the number of participants in each of the housing categories who scored low, medium or high on recognition.

A 3 by 3 Chi square analysis was conducted to examine the relationship between housing status and reporting low, moderate or high scores on recognition. The Chi-square test indicated that there was significant association between housing status and reporting low, moderate or high scores (where $\chi 2 = 9.516$, $df = 4$ and $p<.05$) on recognition.

A further Chi square analysis indicated that there was a significant association between housing status and reporting high scores (where $\chi 2 = 7.157$, df=2 and $p<.05$) on recognition. The results indicated that there was no significant relationship between housing status and reporting medium (where $\chi 2= 1.512$, df=2 and, $p>.05$) or low scores on recognition (where $\chi 2= 5.596$, df=2 and, $p>.05$).

As indicated by table 5.3 below, the majority of drug users in the stably (68%) and unstably housed (58%) categories identified as being low on recognition. In the homeless group, overall, there were nearly similar number of participants who identified as high (32%) or low (39%) on recognition.

Table 5.3: No. of participants who scored Low, Medium and High on recognition for housing groups.

Housing status	Low	Medium	High
NHP	23(68%)	7(21%)	4 (12%)
HP	15(58%)	9 (35%)	2 (8%)
NFA	12(39%)	9 (29%)	10 (32%)

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.
Note: Low Recognition scores include low and very low and High Recognition scores include high and very high scores. The percentages are percentage of participant in each housing group.

Ambivalence

Analysis of the ambivalence scores indicated a significant main effect of housing status group ($F (2, 88) = 3.555$, $p<0.05$, $\eta^2 = 0.27$). Post-hoc analysis demonstrated that homeless drug users have significantly higher ambivalence as compared to stably housed group ($p<0.05$). There was no significant difference in ambivalence between the unstably and stably housed ($p>.05$) and unstably housed and homeless drug users ($p>.05$) as indicated in table 5.4.

Table 5.4: Descriptive statistics of ambivalence for housing groups.

Measure	NHP (n=34)	HP (n=26)	NFA (n=31)
Ambivalence: *M(SD)*	13.03(3.39)	14.23(2.84)	15.06(2.94) *

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless. Ambivalence score range 4-20. *Note. M*=mean, *SD*=standard deviation, *p<0.05 (Compared to NHP).

Low, medium and high ambivalence scores

Ambivalence scores obtained by the housing groups was split by the number of participants in each of the housing categories who scored low, medium or high on ambivalence as indicated in table 5.5.

A 3 by 3 Chi square analysis was conducted to examine the relationship between housing status and reporting low, moderate or high scores on ambivalence. The Chi-square test indicated that there was significant association between housing status and reporting low, moderate or high scores (where $\chi 2 = 10.696$, df =4 and $p<.05$) on ambivalence.

The Chi-square test indicated that there was a significant association between housing status and reporting low scores (where $\chi 2 = 7.956$, df =2 and $p<.05$) on ambivalence. The results however indicated that there was no significant relationship between housing status and reporting medium (where $\chi 2= 3.426$, df =2 and, $p>.05$) or high scores on recognition (where $\chi 2= 5.143$, df =2 and, $p>.05$).

As indicated in table 5.5 below, the majority of participants in stably housed (53%) were low on ambivalence but for the homeless drug users only 19% identified as being low on ambivalence. In unstably housed group, the overall distribution of participants indicated a nearly even split between number of participants who identified as being o high ambivalence (46%) or low ambivalence (42%).

Table 5.5: No. of participants who scored low, medium and high for ambivalence for housing groups.

Housing status	Low	Medium	High
NHP	18(53%)	8(24%)	8(24%)
HP	11(42%)	3(12%)	12(46%)
NFA	6(19%)	10(32%)	15(48%)

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless. Note: Low Ambivalence score include low and very low and high ambivalence scores include high and very high scores. The percentages are percentage of participant in each housing group.

Taking Steps

Analysis of the scores from taking steps indicated no significant main effect of housing status group ($F(2, 88) = .630$, $p > .05$) as indicated in table 5.6 below.

Table 5.6: Descriptive statistics of taking steps for housing groups.

Measure	NHP (n=34)	HP (n=26)	NFA (n=31)
Taking steps: *M(SD)*	32.53(5.63)	33.81(4.65)	32.52(4.43)

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless. Taking steps score range 8-40. *Note. M*=mean, *SD*=standard deviation.

Low, medium and high taking steps scores

The number of participants in each of the housing categories were split by low, medium or high scores on taking steps as shown in table 5.7.

A 3 by 3 Chi square analysis was conducted to examine the relationship between housing status and reporting low, moderate or high scores on taking steps. The Chi-square test indicated that there was no significant association between housing status and reporting low, moderate or high scores on taking steps (where $\chi 2 = 3.386$, $df = 4$ and $p > .05$).

As shown in table 5.7 below, the results indicate that similar percentages of stably housed participants reported high (38%) or low (41%) scores on taking steps. For the unstably housed drug users, there were a higher number of participants who identified as being high (54%) than low (19%) on taking steps. Interestingly, homeless drug users indicated a relatively even distribution between high and low scorers, with slightly more participants reporting high (42%) than low (32%) on taking steps.

Table 5.7: No. of participants who scored low, medium and high for taking steps for housing groups.

Housing status	Low	Medium	High
NHP	14(41%)	7(21%)	13(38%)
HP	5(19%)	7(27%)	14(54%)
NFA	10(32%)	8(26%)	13(42%)

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless. Note: Low taking steps score include low and very low and high taking steps scores include high and very high scores. The percentages are percentage of participant in each housing group.

5.6.2 Difference in the self-efficacy level in drug users on the basis of their housing status.

Analysis of the general self-efficacy indicated a significant main effect of housing status group ($F(2, 88) = 4.567$, $p<0.05$, $\eta^2 = 0.31$) as indicated in table 5.8 below. Post-hoc analysis demonstrated that homeless drug users have significantly lower self-efficacy as compared to stably housed ($p<0.05$). There was no significant difference in general self-efficacy between the unstably and stably housed ($p>.05$) and unstably housed and homeless drug users ($p>.05$).

Table 5.8: Descriptive statistics of GSE for housing groups.

Measure	NHP (n=34)	HP (n=26)	NFA (n=31)
General self-efficacy: *M(SD)*	27.74(5.32)	25.04(4.59)	23.45(7.02) *

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless. General self-efficacy scores range 0-40, *Note. M*=mean, *SD*=standard deviation, *p<0.05 (Compared to NHP).

5.6.3 Difference in readiness to change between the three housing groups on the basis of psychiatric medication

Out of 91 participants in the present study, the results presented below only compared differences between the participants who reported mental health problems. Among those that reported mental health problems (N=77), 45% (n=35) were on prescribed psychiatric medication while 54% (n=42) were not on any prescribed medication as shown in table 5.9 below.

Table 5.9: Difference between housing groups on basis of psychiatric medication.

Psychiatric Medication	Housing status	N
No Medication	NHP	13
	HP	11
	NFA	18
On Medication	NHP	12
	HP	13
	NFA	10

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.

Recognition

A 3 by 2 factorial ANOVA was conducted to examine the effect of psychiatric medication and housing status on recognition.

There was a statistically significant main effect of housing on recognition F (2, 71)= 3.97, p< .05, ω^2 =.10 for those who reported mental health problems. The post hoc tests revealed that there was a significant difference between stably housed and homeless drug users only (p<.05) where homeless drug users had greater recognition than stably housed drug users. There was no significant difference between stably and unstably housed (p>.05) and homeless and unstably housed drug users (p>.05).

There was no significant main effect of psychiatric medication on recognition F (1, 71) = 1.62, p>.05, ω^2 = .02

There was no significant interaction effect between housing status and psychiatric medication on recognition, F (2, 71) = .109, p>.05, ω^2 = .003.

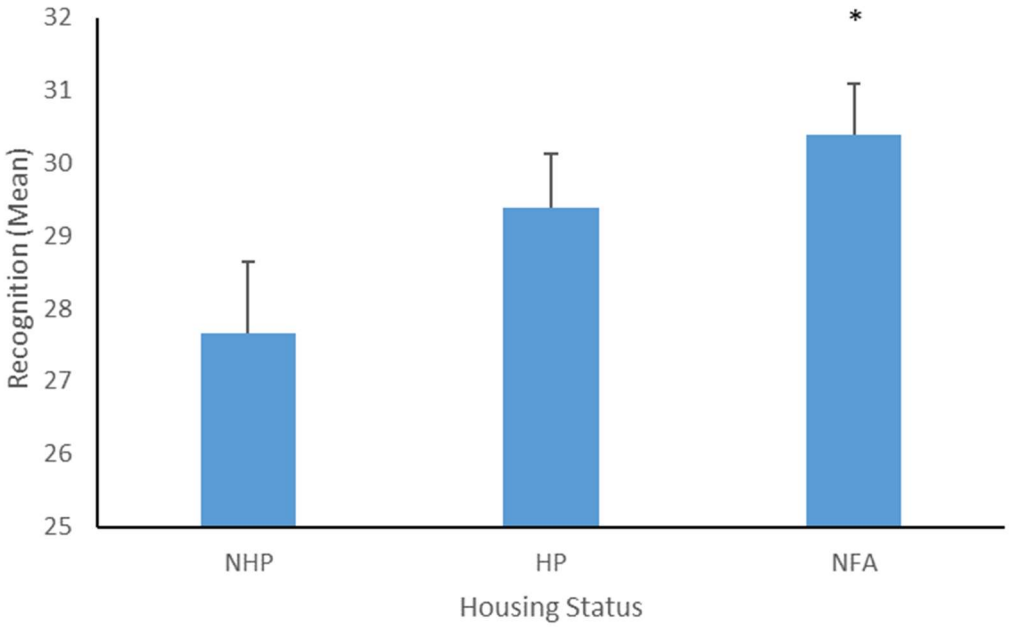

Figure 5.1: Difference between housing groups on recognition for those who reported mental health problems: No Housing Problem, Housing Problem and No Fixed Abode. *p<0.05 (Compared to NHP). Error bars represent standard errors.

Table 5.10: Recognition scores for those on and not on psychiatric medication in the three housing groups

Psychiatric Medication	Housing status	N	Mean (s.d)
No Medication	NHP	13	28.54(5.75)
	HP	11	30.09(2.98)
	NFA	18	31.33(3.71)
On Medication	NHP	12	26.67(4.07)
	HP	13	29.08(4.25)
	NFA	10	30.50(3.89)

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.

Ambivalence

A 3 by 2 factorial ANOVA was conducted to examine the effect of psychiatric medication and housing status on ambivalence.

There was a statistically significant main effect of housing on ambivalence F (2, 71) = 4.62, p< .05, ω^2 =.11 for those who reported mental health problems. The post hoc tests revealed that there were significant differences between stably housed and both unstably housed (p<.05) and homeless drug users (p<.01), where stably housed drug users had lower ambivalence than problematically housed groups. There was no significant difference between homeless and unstably housed drug users (p>.05).

There was no significant main effect of psychiatric medication on recognition F (1, 71) = 2.11, p>.05, ω^2 = .02

There was no significant interaction effect between housing status and psychiatric medication on ambivalence, F (2, 71) = .118, p>.05, ω^2= .003.

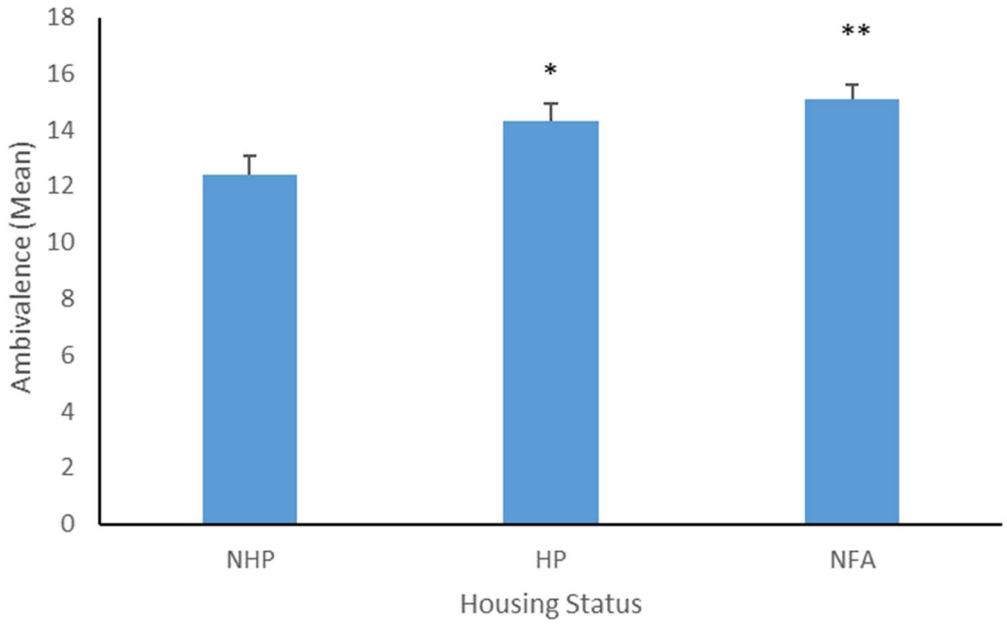

Figure 5.2: Difference between housing groups on ambivalence for those who reported mental health problems. *p<0.05 (Compared to NHP). Error bars represent standard errors.

Table 5.11: Ambivalence scores for those on and not on psychiatric medication in the three housing groups.

Psychiatric Medication	Housing status	N	Mean(s.d)
No Medication	NHP	13	13.00(3.08)
	HP	11	15.09(2.84)
	NFA	18	15.28(2.42)
On Medication	NHP	12	11.75(4.55)
	HP	13	13.69(2.87)
	NFA	10	14.70(3.37)

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.

Taking Steps

A 3 by 2 factorial ANOVA was conducted to examine the effect of psychiatric medication and housing status on taking steps.

There was no statistically significant main effect of housing on taking steps, $F(2, 71) = .523$, $p > .05$, $\omega^2 = .015$.

There was no significant main effect of psychiatric medication on taking steps, F (1, 71) = .660, p>.05, ω^2= .009.

There was no significant interaction effect between housing status and psychiatric medication on taking steps, F (2, 71) = .286, p>.05, ω^2= .008.

Table 5.12: Taking steps scores for those on and not on psychiatric medication in the three housing groups.

Psychiatric Medication	Housing status	N	Mean (sd)
No Medication	NHP	13	32.69(5.20)
	HP	11	32.82(5.03)
	NFA	18	31.94(4.58)
On Medication	NHP	12	32.50(6.53)
	HP	13	34.77(4.40)
	NFA	10	33.00(3.71)

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.

5.6.4 Difference in general self-efficacy levels between the three housing groups on the basis of psychiatric medication

There was a statistically significant main effect of housing on GSE, F (2, 71) = 3.490, p<.05, ω2 = .090. Post hoc tests indicated that there was statistically significant difference between stably housed and homeless drug users (p<.05), where stably housed drug users scored significantly higher on GSE as compared to homeless group. There was no significant difference between stably and unstably housed drug users (p>.05) and homeless and unstably housed drug users (p>.05).

There was no significant main effect of psychiatric medication on GSE, F (1, 71) = 3.342, p> .05, ω2 = .045.

There was no significant interaction effect between housing and psychiatric medication on GSE, F (2, 71) = .818, p>.05, ω2 =.023.

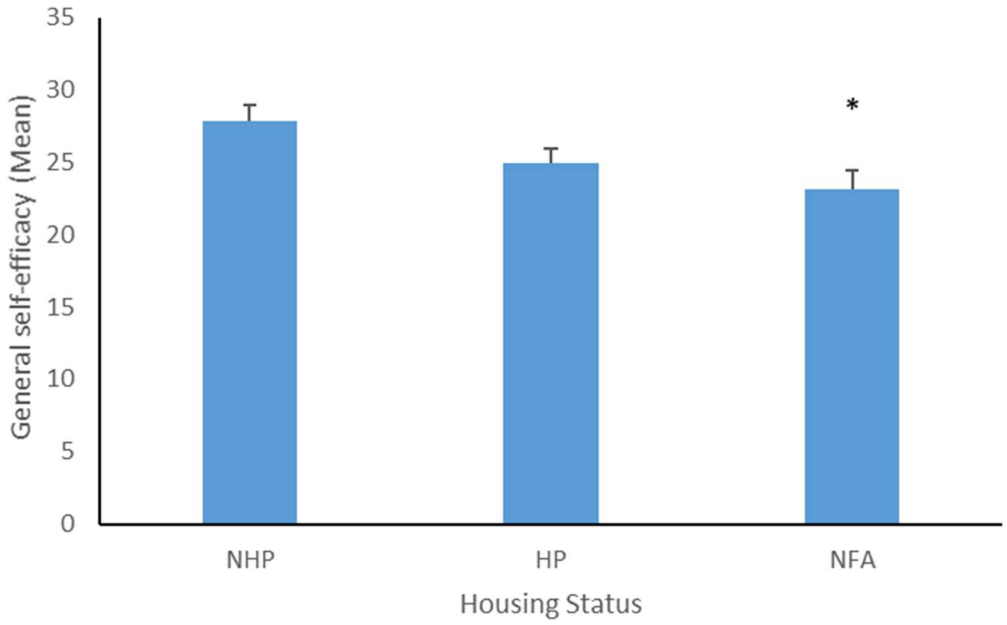

Figure 5.3: Difference between housing groups on general self-efficacy for those who reported mental health *p<0.05 (Compared to NHP). Error bars represent standard errors.

Table 5.13: Taking steps scores for those on and not on psychiatric medication in the three housing groups.

Psychiatric Medication	Housing status	N	Mean(sd)
No Medication	NHP	13	27.54(5.36)
	HP	11	23.91(4.90)
	NFA	18	21.50(7.69)
On Medication	NHP	12	28.17(5.58)
	HP	13	25.85(4.37)
	NFA	10	26.10(3.14)

NHP: No Housing Problems, HP: Housed with Problems or unstably housed, NFA: Homeless.

5.7 Discussion

The aim of this study was to understand if drug users in different housing groups differed in their motivation to change (as measured by recognition, ambivalence and taking steps) and levels of self-efficacy. The results of the study indicated that the group means for the homeless drug users were significantly higher for both recognition and ambivalence scores than stably housed drug users only. More interestingly, descriptive statistics indicated that a greater percentage of stably housed (68%) closely followed by unstably housed (58%) were low on recognition, only a small percentage of stably housed or unstably housed groups were high on recognition (12% and 8% respectively). Low recognition is linked with a lack of consideration for change because of the low perceived problems. The homeless drug users' group on the other hand, had an almost equal split of members who reported low recognition (39%) and high recognition (32%). This could suggest that some members lack awareness of the problem while others are aware of it. Regarding ambivalence, the majority of stably housed drug users were low on ambivalence (53%) and only 24% were high on ambivalence. By contrast, almost half (48%) of the homeless participants reported high ambivalence, which reflects greater uncertainty about change or being in the contemplation stage (Prochaska et al., 1992) and only 19% were low on ambivalence. The unstably housed drug users indicated a nearly equal distribution in the number of participants with low (42%) and high (46%) ambivalence scores.

On taking steps, there was no significant difference between the group means of the housing groups, where taking steps is indicative of being in the action stage on the cycle of change (Prochaska et al., 1992). A more detailed investigation of scores indicated that similar proportions of stably housed participants reported high (38%) or low (41%) scores on taking steps. For the unstably housed drug users, there were a higher number of participants who identified as being high (54%) than low (19%) on taking steps. Interestingly, homeless drug users indicated a relatively even distribution between high and low scorers, with slightly more participants reporting high (42%) than low

(32%) on taking steps. Furthermore, analysis of low, medium and high scores on each of the measures of motivation indicated that there was a significant association between housing status and attaining high scores on recognition and low score on ambivalence. Additionally, on self-efficacy, the results indicated that homeless drug users had significantly lower self-efficacy than stably housed drug users only.

Further analysis was done to compare the housing groups on motivation and self-efficacy on the basis of psychiatric medication. The results of the comparison between the housing groups indicated that there was no difference in the motivation to change or self-efficacy as measured by recognition, ambivalence and taking steps related to whether participants were currently prescribed psychiatric medication. The discussion will review the findings of the current study.

5.7.1 Precontemplation and contemplation stage

Although there is some research on motivation in SUD, there is very little information about the influence of housing circumstances on motivation to change. The assessment of motivation to change and the understanding of factors that potentially influence it may be significant for the treatment planning of SUD patients (Prochaska and DiClemente, 1992), especially to inform drug services about specific interventions that are best suited to the individual's motivation level. Interestingly, the current findings suggest that homeless drug users had significantly higher recognition than stably housed drug users. Higher recognition reflects an awareness of the existence of a problem and a consideration of the challenges experienced because of the substance use (Prochaska and DiClemente, 1992). On recognition, the majority of participants in the stably and unstably housed groups indicated low recognition. Low recognition reflects that the individual does not perceive their substance use as a problem and is therefore not considering changing this behaviour. It is noticeable that only 8% (unstably housed) and 12% (stably housed) of these groups reported high scores for recognition. It is possible that the housed groups did not perceive their drug use as a problem as they were

already accessing treatment and perceived that they were already doing something about the drug use. An alternative explanation may be that housed drug users were not using as much substances as the homeless group, where previous studies have found higher rates of substance use in homeless drug users as compared to housed drug users (Eyrich-Garg et al., 2008; Krupski et al., 2015). Higher drug use is associated with greater recognition of the problem. The results of the current study report that homeless drug users, on the other hand were evenly split between high and low scorers on recognition, indicating that some of the participants perceived the substance use as causing some problem to their lives whilst others did not perceive the substance use as a problem. It is possible that the variation in recognition scores of homeless drug users and stably housed drug users, where homeless had significantly higher recognition than stably housed groups may be explained by the difference in problems experienced by each group. For instance, homeless drug users have a higher likelihood of experiencing greater severity in drug use, chaotic lifestyle, exposure to greater harm and poorer health outcomes owing to drug use (Orwin et al., 2005; Topp et al., 2012). All of the problems associated with homeless living would make them more aware of their drug problem and possibly increase the recognition scores. The overall finding of the current study concurs with Velasquez et al. (2016) who suggested that a large proportion of homeless individuals identified as being in precontemplation and contemplation stage, however, their study did not directly compare the studied sample of homeless individuals with stably housed individuals.

Additionally, the results of the current study found that homeless drug users experienced significantly greater ambivalence than stably housed drug users, where greater ambivalence indicates alternating between the desire to change and not change and weighing up the pros and cons of change (Prochaska and DiClemente, 1992). The results of the current study also indicate that the majority of participants in the stably housed groups scored low on ambivalence (53%), suggesting low uncertainty about making the change to their drug problem. By contrast, a large proportion of homeless drug users (48%) reported high ambivalence, suggesting that they experienced lower

willingness to change, possibly indicative of questioning their ability to succeed at changing drug use (self-efficacy). Interestingly, the unstably housed drug users indicated an almost equal distribution of high and low ambivalence scores, suggesting that some were more willing and certain about change than others. It is possible that unstable housing condition influenced the level of uncertainty, but there are no studies among unstably housed groups to compare and contrast these findings to.

Furthermore, higher ambivalence in homeless drug users may be linked to their housing circumstances, where homeless drug users with their contextual instability oscillate between the advantages and disadvantages of changing their drug use behaviour, especially when one is uncertain about its effect on securing stable residence. Prior research suggests that substance use during homelessness is often utilised as a coping strategy to deal with the stressors of homelessness (Kemp et al., 2006; Fountain et al., 2003), so giving up drugs would be perceived as a greater challenge for those without stable homes. Homeless drug users are frequently labelled as ‘unmotivated’, ‘disinterested’ or ‘resistant to treatment’, overlooking the fact that their homelessness or precarious living conditions makes attending appointments or getting washed and dressed for appointments is a mammoth task for the individual. It is thus not surprising that the homeless group seem to question the value of changing their drug use, as evidenced by their greater ambivalence compared to stably housed counterparts.

The authors of the SOCRATES (Miller and Tonigan, 1997) state that higher ambivalence is indicative of questioning one’s addiction as a problem and the ability to control the addiction whilst lower ambivalence is indicative of not wondering about the substance use as a problem. It is possible that individuals do not wonder because they question their ability to do something about the addiction, which might be related to lower self-efficacy. Interestingly, Miller and Tonigan, (1997) suggest that lower ambivalence can also be interpreted as the individual is not wondering because the individual is already ‘aware’ of the drug problem. To elaborate, one of the statements to assess ambivalence (SOCRATES, Miller and Tonigan, 1997) asks ‘Sometimes I wonder if I am in

control of my drug use' which could be scored as strongly disagree where the individual 'does not wonder' but 'knows' that they are not in control of the drug use. On the basis of the findings of this study, unstably housed groups indicated greater uncertainty about their substance misuse and indicated different needs to those that were in stable accommodation.

5.7.2 Action stage

Taking steps is associated with being in the 'action stage' on cycle of change (Prochaska and DiClemente, 1992), where the results of the current study found that there was no significant difference between the three housing groups on group means on taking steps. The results on the taking steps measure are best interpreted in light of the results on all three measures of motivation. Although there are no other studies to compare and contrast the findings with, a possible explanation for the results may be that all three housing groups in the current study perceived themselves as being in the action stage as they were already 'doing something' about the substance use by accessing SUD treatment in Forward Leeds and all were being prescribed OST. A more detailed investigation of the results (table 5.7) indicated that stably housed group were divided between high (38%) and low (41%) scorers on taking steps. Homeless drug users indicated a similar pattern on taking steps with a relatively even distribution between high (42%) and low (32%) scorers, with slightly more participants with high scores. Only within the unstably housed groups, over half of the participants (54%) reported being in the 'high' range on taking steps. Miller and Tonigan (1997) suggest that people who report high scores on taking steps perceive that they have made significant change and are experiencing the benefits of the change, whilst low scores perceive that they have not made any change and are not involved in any activities to make changes. The findings from the current study indicated that unstably housed groups, 54% of whom reported high scores, possibly perceived more benefits of making the change to drug use or were assessing their 'taking steps' on the basis of their registration at treatment services (and being prescribed OST medication). However, being 'in treatment on OST' does

not guarantee successful treatment outcomes, where a large proportion of drug users despite being on prescribed OST continue to use illicit drugs on top of the prescription, miss appointments for psychosocial interventions or disengage from services several times (Black, 2020). Overall, the results of the current study indicate that despite being in the ‘action’ stage, individual motivation levels may be very different for homeless or unstably housed drug users as compared to stably housed drug users.

The results of the current measure ‘action’ stage should not be interpreted in isolation but within the context of the overall scores of housing groups on recognition and ambivalence. Infact, addiction services suggest that the interpretation of motivation levels should be in context of the overall presentation of the individual such as their physical or mental health or having financial and social support to pursue treatment. Overall, the results of the current study indicate that homeless drug users had low motivation to change suggestive of a higher risk of dropping out of treatment services (Leon, 1994) or poor outcomes in treatment. Stably housed drug users on the contrary indicated higher motivation to change as compared to both homeless and unstably housed drug users. Interestingly, the unstably housed group were more similar to stably housed drug users on precontemplation and contemplation than homeless drug users but were different with regards to action stage, suggesting the need for further investigation into the perception of motivation to change in their group.

5.7.3 General Self-Efficacy

Along with readiness to change, it is important to identify the level of self-efficacy, where the belief in one’s capability of making a change towards a desired goal can have a significant impact on the pursuit of the goal (Bandura and Locke, 2003). It has been suggested for alcohol use disorders, that higher levels of self-efficacy are associated with greater perseverance towards abstinence in the face of obstacles (Litt et al., 2018), possibly suggesting that self-efficacy is important to understand why some individuals may be

motivated whilst others are not. However, there is limited understanding of self-efficacy in drug users in variable housing circumstances.

The results of the current study found that stably housed drug users indicated significantly higher self-efficacy than homeless drug users where higher self-efficacy is indicative of a better coping mechanism for daily stressors and better coping with adversity in demanding situations (Luszczynska et al.,2005). Poorer self-efficacy could provide a useful insight into why the homeless group perceived greater problems and uncertainty about their substance misuse, as evidenced by higher recognition and ambivalence scores in comparison to the stably housed drug users. Research suggests that homeless individuals report disproportionately high rates of substance use problems, health problems, isolation and exclusion accompanied by feelings of worthlessness (Johnson and Chamberlain, 2008; Kemp et al., 2006). It is possible that the lack of stable housing accompanied with the challenges of homeless living erodes the individual's belief that it is possible to effect change in any problematic aspect of one's life, including the ability to succeed in drug treatment. It is worth considering that although both stably housed and homeless participants in the current study were already accessing treatment (i.e., on OST); the difference in self-efficacy levels highlights the vulnerability of the homeless group. The results on motivation and self-efficacy are indicative of the greater need of homeless drug users, where the homeless group indicate lower motivation to change and lower self-belief in their ability to carry out the change. It is not known if the lower self-belief was indicative of other challenges such as drug use where, previous studies (Torrecillas et al., 2015) have found that self-efficacy was inversely related to the quantity of drugs consumed, where higher self-efficacy scores indicated lower probability of consuming drugs. Previous studies (DiClemente and Hughes, 1990) have also found an association between low self-efficacy and psychological health, where alcohol users who scored lowest on self-efficacy indicated poor psychological well-being such as a sense of 'hopelessness' and 'helplessness'. The study was however solely based on alcohol users, with no information on illicit drug consumption patterns or housing circumstances.

Previous studies on alcohol users have suggested that motivation to change and self-efficacy are interrelated and were helpful in predicting outcomes in treatment (Muller et al., 2019; Litt et al., 2018), especially when both motivation and self-efficacy can be enhanced by the use of appropriate motivational interventions.

The findings from the current study challenges the assumption that all drug users in treatment are at the same stage of motivation. The results of the current study also indicated that psychiatric medication had no effect on the measures of motivation. There are no other studies to compare and contrast the findings with, on psychiatric medication, but the results need to be interpreted with caution as the sample size was small, suggesting a future study with a larger sample would be able to explore this in more detail. The findings from the current study recommended that rather than focusing on increasing access to OST medication, priority should be placed upon improving the transition through the stages of motivation.

5.8 Conclusion

The current study aimed to investigate potential differences in motivation to change and self-efficacy among drug users in variable housing conditions. The investigation demonstrated that homeless drug users had significantly lower levels of readiness to change, and self-efficacy as compared to drug users in stable accommodation. More specifically, homeless drug users indicated greater awareness of their problem but higher uncertainty about their capacity to address the problem. In combination with their low self-efficacy scores the overall findings was suggestive of a greater need for targeted motivational interventions in treatment for homeless drug users. On the other hand, unstably housed drug users indicated a high proportion of the group being low on recognition of the problem behaviour, and a high proportion of participants being ambivalent towards their desire or ability to change, indicative of being in the precontemplation and contemplation stage. Overall, the unstably housed drug users indicated a similarity to stably housed drug users on recognition and ambivalence but indicated a difference on taking steps. The

investigation of differences on the basis of psychiatric medication indicated that no differences existed on motivation and self-efficacy between the housing groups. A future study with a larger sample might enhance understanding on the effect of psychiatric medication on the variables investigated in the current study. It would be highly recommended to engage in further research to elaborate on the reasons for the difference between the housing groups on measures of motivation and self-efficacy.

CHAPTER 6: Main Discussion

Drug addiction is a global problem that extends its negative impact beyond society, to the health and well-being of drug users. One of the factors commonly associated with drug addiction is homelessness, where substance use disorders (SUD) is the most prevalent diagnosis among homeless individuals (Klee and Reid, 1998a, 1998b; Kemp et al., 2006; Magwood et al., 2020). Furthermore, many homeless individuals experience 'tri-morbidity' which refers to the co-occurrence of poor physical and mental health along with substance misuse (Cornes et al., 2018).

Although a small number of studies among homeless drug users have assessed factors such as drug use (Kemp et al., 2006; Klee and Reid, 1998b), health (O'Brien et al., 2015) or quality of life (QoL, O'Brien et al., 2015), very few studies have compared these variables to those of housed drug users. More importantly, limited studies that have investigated differences between homeless and housed drug users (Krupski et al., 2015; Topp et al., 2013), have mostly overlooked those who are neither homeless not stably housed, but rather living in unsuitable and problematic housing conditions (i.e., unstably housed drug users). In research, unstably housed drug users have been frequently categorised with homeless drug users (e.g., Topp et al., 2013) or housed drug users (e.g., Krupski et al., 2015), and have not been investigated as an independent category. A report by Public Health England (2016) suggests that a singular focus on either homelessness or stable housing amongst drug users prevents opportunities to improve outcomes or prevent deterioration for those who are not homeless but rather living in housing conditions that are not conducive to change. It has been suggested that unstably housed drug users are at particular risk of becoming completely homeless (Magwood et al., 2020), where most homeless individuals become homeless via the route of unstable housing (ALMA, 2019). ALMA (2019) recommends that further understanding on unstably housed drug users is important to prevent their deterioration into 'literal homelessness', and limited understanding about the needs of unstably housed drug users limits the opportunities to offer appropriate and effective interventions. To the best of

available literature, the only investigation on marginally housed drug users (similar to unstably housed) is by Eyrich-Garg et al. (2008). The study employed a comparative approach to analyse differences between drug users who were literally homeless, marginally housed and economically housed poor and not poor within a population of drug users in the United States.

Importantly, studies comparing drug use (Krupski et al., 2015; Doran et al., 2018) or risk behaviour (Topp et al., 2013) between homeless and housed drug users have overlooked other crucial factors such as quality of life and motivation to change, that significantly impact the lives of drug users. These factors are discussed in more detail later in this chapter. More specifically, limited studies that compare psychological health or physical health between homeless and housed drug users often rely on hospital admissions or general measures of psychological assessment, which may not capture the important details about levels of depression, anxiety and stress. Often individuals who are admitted to hospital may be at a 'desperate point' and are not representative of homeless drug users who do not end up in hospital and may remain 'hidden homeless. As depression and anxiety are among the most prevalent mental health disorders among drug users, it is vital to assess these factors specifically (Black, 2020, 2021; Delgadillo et al., 2013). Additionally, depression, anxiety and stress have a significant association with SUD and homelessness, where a high proportion of homeless drug users self-medicate with drugs to cope with the negative feelings (Khantzian, 1985; Klee and Reid, 1998b). Despite a consensus among addiction researchers about the significance of stress in initiation, maintenance, and relapse to SUD (Sinha, 2008; Solinas et al., 2010), there is a lack of studies that compares stress levels among drug users in variable housing circumstances. Pre-clinical studies (Solinas et al., 2010) comparing rats living in enriched environments (EE) vs standard environments (with no opportunities for play, socialising or stimulation) has found that rats in EE are less likely to relapse to drugs as compared to rats in standard environments. The studies recommended that the living situation or environment of individuals with SUD should be taken into consideration when planning treatment for SUD.

Research studies on homelessness often indicate varying definitions of homelessness depending on the country in which the research is conducted (as

elaborated in Ch. 1), making it difficult to generalise and compare findings. This includes variation in the criteria used to categorise individuals as homeless such as spending 1 night in the last 30 days as homeless (Eyrich-Garg et al., 2008) or 1 night in the last 90 days as homeless (Krupski et al., 2015). The studies also indicate discrepancies in sampling techniques such as data gathered from health clinics solely catering to homeless individuals (O'Brien et al., 2015), emergency departments (Doran et al., 2018) or computer assisted systems that gather data on individuals receiving SUD treatment (Eyrich-Garg et al., 2008). The differences in sampling techniques suggests that drug users who did not access SUD treatment or health clinics were excluded from the studies. It is possible that drug users with more chaotic lifestyles, greater substance use, higher psychiatric problems or experiencing 'hidden homelessness' were not accessing the services where data was gathered.

Additionally, limited studies that have explored drug use behaviour among homeless and housed drug users have primarily examined differences in frequency of drug use whilst overlooking amount or quantity of drug use. Although the frequency of drugs is important, it does not provide a comprehensive understanding of tolerance levels, addiction severity and possible duration of use or risk behavior as elaborated in Ch.3.

Most of the studies mentioned above that compare drug users in variable housing circumstances are based within a USA population with one study based in Australia (Topp et al., 2013). The findings of the studies may not be directly generalizable to a UK-based population owing to differences in social welfare system, funding for SUD treatment services (such as the NHS vs insurance or private payments), and individual differences in problems and challenges experienced by drug users in the different countries. The gap in research within the UK population has been highlighted by Public Health England (2016) recommending further studies that provide insight on the role of housing in the lives of drug users in UK. Therefore, the current research programme has aimed to bridge the gap in knowledge by investigating the association between housing circumstances of drug users with a broad range of factors, such as substance use, quality of life, health and motivation to change. Additionally, this research programme provides novel understanding about a previously neglected category

of unstably housed drug users, to provide information about their specific problems, which may help develop and design targeted interventions to avoid their deterioration into complete homelessness.

The current research programme consisted of three studies, the first study (chapter 3) investigated differences in drug using behaviour and dependency levels among drug users in varying housing circumstances. The second study (chapter 4) investigated differences in QoL and health outcomes among drug users in different housing circumstances. Finally, the third study (chapter 5) investigated differences in readiness to change (as measured by recognition, ambivalence and taking steps) and self-efficacy in drug users across varying housing circumstances. The main findings from the three studies are synthesised and evaluated below in light of current literature.

6.1 Drug use and dependency

It is well established that substance misuse remains a consistent concern among homeless individuals in both national (Kemp et al., 2006; Neale, 2001) and international studies (Eyrich-Garg et al., 2008; Krupski et al., 2015). Although substance use is evidenced as being disproportionately high among homeless individuals, the full impact of housing circumstances on drug behaviour has not been comprehensively investigated as discussed above. The findings from Study 1(Ch. 3) indicated significant differences in drug use behaviour and dependency levels between the housed (i.e., stably housed and unstably housed) and homeless drug users. The overall results indicated that unstably housed drug users were more similar to stably housed drug users on their drug using behaviour. On drug dependency 44% of homeless drug users indicated high drug dependency as compared to 22% of drug users in unstably housed and 11% in stably housed groups. The results evidently indicated that a higher proportion of homeless drug users experienced high drug dependency, indicative of both physiological and psychological dependency and feeling that drugs were necessary to existence.

More specifically, there was a similarity between the unstably housed and stably housed drug users on the total amount of illicit drugs consumed, overall stimulant use and the amount of opiates consumed. These findings were contradictory to

previous findings (Eyrich-Garg et al., 2008), which suggested that marginally housed were similar to homeless drug users on severity of drug use (measured by number of treatment episodes in the previous month) and frequency of heroin and cocaine use. The marginally housed group in the mentioned study was similar to the unstably housed in the current study. Interestingly, the study by Eyrich-Garg et al., (2008) also suggested that despite reporting no differences between the homeless and marginally housed on frequency of drug use, homeless drug users were spending more money on drugs as compared to marginally housed. Although Eyrich-Garg et al., (2008) did not expand on the reason for this discrepancy, it is possibly indicative of a difference in quantity of use where homeless drug users, despite having similar drug use frequency, consumed larger quantities of drugs than marginally housed drug users resulting in higher expenditure on drugs. The assessment of quantity of drug use is an important measure that has been overlooked in previous research studies that explore drug use in homeless individuals. As discussed earlier, the assessment of amount or quantity of drug use can be indicative of tolerance levels, severity in addiction and potential duration of use. Furthermore, it can provide insight about risk behaviour, where the use of larger amount of drugs increases the risk of overdose or injecting injuries for injecting drug users (IDU). The current research steered away from the criminalisation of drug use owing to the negative impact on recovery, where Doran et al. (2022) suggest that the criminalisation of both homelessness and drug addiction contributes to risky behaviour such as using drugs hastily or alone in concealed locations. Drug services have found that injecting drugs among homeless individuals is indicative of higher risk such as groin injecting, using dirty water for preparation or injecting quickly as compared to injecting drugs among housed individuals. It is not surprising that the highest percentage of injecting drug users (50%) in the current study was found among the homeless group, highlighting that injecting drug remains a concern among homeless drug users. An additional concern is that the results of study 1 suggested that homeless drug users were consuming significantly greater amount of opiates and stimulants as compared to both unstably and stably housed drug users. Both opiates and stimulants are significantly associated with poorer outcomes in attaining a stable home (Fischer et al., 2006) and elongate the duration of homelessness (Fountain et al., 2003).

Although research studies indicate that homeless individuals report greater problems with SUD (Magwood et al., 2020; Keogh et al., 2015) as compared to the general population, the reasons for greater drug use among the homeless are unclear. One of the explanations is that drug use is a means of adapting to homelessness, where homeless individuals gravitate towards drugs owing to the ease of availability, to bond and socialise with other drug users, and to cope with the stress of homelessness (Johnson et al., 1997; 2007). Another explanation is to self-medicate for physical and psychological problems or to address the trauma and abuse (Carver et al., 2020; Klee and Reid, 1998b) experienced prior and during homelessness.

Khantzian's theory (1985; 2021) proposed that the experience of distress steered individuals towards drugs as a means of self-medication, where individuals use drugs from a point of human misery and suffering rather than in pleasure or self-destruction. Aligned with self-medication hypothesis, it is possible that homeless drug users in the current research consumed more drugs as a means to cope with the distress of being homeless rather than to seek pleasure. On the other hand, it is also suggested that SUD precedes homelessness. Many drug users become homeless after exhausting financial and social resources owing to the problematic substance use, with individuals reporting substance use as the primary cause for becoming homeless (Johnson et al., 1997; 2007; Kemp et al., 2006) and remaining homeless (Neale, 2001). As the research did not gather data on reasons for homelessness, the primary cause for becoming homeless remains unknown in the sample studied.

Among the three housing groups studied in the current research, homeless drug users indicated significant disadvantage in both drug dependency and overall frequency and amount of drugs consumed. Therefore, it would be expected that being in opiate substitute treatment (OST) programme would be advantageous to their SUD treatment outcomes. However, results of study 1 indicated that despite receiving OST medication, homeless drug users reported higher levels of drug dependency and overall drug use as compared to unstably and stably housed counterparts. These results may indicate that contrary to expectations, OST medication did not result in improved drug-related outcomes for the homeless group. The results could possibly suggest that for those attempting to

address the SUD problem, being in ‘unstable housing’ or ‘problematic’ housing was better than ‘no housing at all’. However, the research does not intend to suggest that unstable housing is conducive to recovery from SUD, where previous studies have suggested that many individuals end up homeless via the route of unstable housing (ALMA Economics, 2019). Additionally, many of the acknowledged barriers to accessing SUD treatment such as stigma, inability to remain in one location for a set period of time to receive support, rigid standards of attendance and compliance (Magwood et al., 2020) and the stress of living in unstable housing may be applicable to those in the unstable housing category. The results from the study 1 are suggestive of an association between dependency levels, drug use and housing circumstances. Although the inference of causality cannot be established owing to a cross-sectional design, the variation in dependency levels and drug use among the current sample of drug users suggests the need for further research to evaluate the possible reasons for these differences.

6.2 QoL and Health

In the recent years, there has been an increase in the significance placed upon measuring QoL. Self-reported outcomes such as QoL in patient care provides a more comprehensive understanding of patient experiences and is more recovery oriented as compared to socially desirable and objective measures such as drug use and crime (De Maeyer et al., 2010; Strada et al., 2017). Although limited studies investigate QoL among homeless drug users, they have not assessed QoL in non-homeless drug users. Additionally, studies that assess QoL among drug user mostly focus on health related QoL (De Maeyer et al., 2010; Gadermann et al., 2021), which measures the absence of disease rather than ‘overall satisfaction with life’. Prior studies that assess QoL in drug users have demonstrated an association between QoL, treatment efficacy, engagement, and outcomes related to SUD (Strada et al., 2017; Kelly et al., 2018), but the studies do not compare drug users in variable housing circumstances. The results of study 2 indicated that QoL was the only variable that was any level of deterioration in housing circumstances was indicative of deterioration in QoL scores. More specifically, unstably housed drug users reported significantly worse QoL than stably housed drug users, and homeless drug users reported

significantly worse QoL than both stably and unstably housed drug users. The finding highlighted the heterogeneity among drug users in terms of their individual appraisal of their overall well-being. While unstably housed drug users indicated similarity to stably housed counterparts on drug use behaviour, they indicated significant difference to them on overall well-being. Specifically, unstably housed drug users experienced a lower overall satisfaction with life, including social relationships as defined by NDTMS (Public Health England, 2018) than stably housed drug users. Although there are no comparative studies to evaluate the findings with, it would be expected that the poor living conditions of unstably housed group, such as living with mould, rat-infestation or risk of violence would affect their perception of well-being. Gentil et al. (2019) utilised cluster analysis to suggest that individuals living in temporary accommodation with a diagnosis of SUD had low QoL scores, whereas those with multiple episodes of homelessness had even lower QoL scores. Gentil et al. (2019) focused on homeless individuals rather than drug users. Research suggests a link between QoL and drug use, where most QoL studies report a negative association between drug use and QoL (De Maeyer et al., 2010). However, continued drug use is not necessarily an indicator of poor QoL (De Maeyer et al., 2013; Kelly et al., 2018), possibly suggesting the role of other factors that influence QoL such as housing conditions. Infact, some studies suggest that low QoL is a bigger motivator for treatment than the desire to reduce drug use (Laudet et al., 2011). It is possible that the experience of poor physical and psychological health, strained social relationships and financial problems may motivate individuals to seek drug treatment. Although causation cannot be established from the current research due to the cross-sectional nature of the study, the current findings suggest that housing circumstances of drug users possibly influence the QoL scores. Therefore, it is not surprising that data from study 2 indicated that the participant's self-reported satisfaction with accommodation status was positively related to QoL, physical and psychological health but negatively correlated with severity of anxiety, depression and stress.

Prior studies suggest that low QoL scores are associated with poor physical and mental well-being (Gadermann et al., 2021), greater severity in drug use, and higher odds of using heroin (Kelly et al., 2018). This aligns with the finding from

study 2 which suggests that compared to other drugs measured, the amount of opiate consumed was the only significant predictor of quality of life and both physical and mental health in the studied sample of drug users. Previous studies indicate that heroin users with higher potential for psychological and physical addiction are more likely to have greater physical and mental health problems, and greater dependency as compared to users of other drugs (Topp et al., 2013; Kemp et al., 2006), where health and dependency are associated with QoL (Kelly et al., 2018).

The link between QoL and health is clear (De Maeyer et al., 2010; Gadermann et al., 2021), and both homeless and unstably housed drug users in the current study reported poorer psychological health than stably housed drug users. While previous studies have established that homeless drug users report poorer psychological health than housed drug users (Krupski et al., 2015), there are no studies that investigate psychological health in unstably housed drug users, with the exception of Eyrich-Garg et al. (2008). The findings of the current study were contrary to findings by Eyrich-Garg et al. (2008) which suggested that marginally housed indicated less severity in mental health problems (measured by psychiatric hospitalisation and composite psychiatric score) than literally homeless drug users. Instead, the current study suggested that unstably housed drug users were similar to homeless drug users in terms of their psychological health, severity of depression and anxiety and perceived stress. It is possible that residing in unstable housing with uncertainty about the future may have a detrimental impact on the psychological well-being of unstably housed group, where there is limited understanding of the specific problems experienced by them. Importantly, poor psychological health including symptoms of anxiety, depression and stress have been identified as risk factors for homelessness (ALMA Economics, 2019) and problematic drug use (Klee and Reid 1998a, 1998b). Many drug users self-medicate as a means to cope with feelings of depression, stress and poor physical health. Higher levels of stress, low mood and anxiety have a negative impact on drug treatment outcomes by increasing severity of addiction or increasing likelihood of relapse (Klee and Reid, 1998a; Neale, 2001; Norman et al., 2007).

Furthermore, in addition to psychological problems, homelessness also increases the risk of deterioration in physical health, with higher chances of exposure to diseases and infection, lack of sleep, aches, pains and unmet physical health problems (Fountain et al., 2003; Klee and Reid, 1998; Wolf et al., 2012;). It is therefore not surprising that the findings of study 2 indicated that homeless drug users reported significantly poorer health than stably housed drug users.

The finding of studies 1 and 2 suggests that homeless drug users were significantly disadvantaged as compared to stably housed drug users with greater drug problems, lower QoL and poorer overall physical and mental health. Importantly, comparing differences on the basis of being prescribed OST or psychiatric medication did not indicate improvement in outcomes. Overall, despite being 'housed', unstably housed were more similar to homeless drug users than stably housed drug users with regards to psychological health, where poor psychological health is indicative of poor engagement in SUD treatment (Neale, 2001)

The findings of study 2 highlight the importance of recognising that the drug related problems reported by unstably housed were different to the QoL and health related problems, whilst reiterating the interconnection between substance use, QoL and health. It is important to acknowledge and expand the availability of psychological support for unstably housed drug users, whilst recognising that the psychological needs of unstably housed are different to stably housed drug users despite both groups being 'housed'. One of the factors that can significantly improve their chances of achieving success in drug treatment improve recovery from SUD is motivation to change.

6.3 Readiness to change and self-efficacy

Public Health England (2016) recommends that the provision of housing without effective treatment will not resolve the problem of substance misuse. However, it is worth considering if the provision of effective treatment without addressing the problems of housing will resolve the issue of substance misuse. A prerequisite for effective treatment is motivation to change, a key factor which

influences both engagement and rates of successful completion in SUD treatment.

In light of the findings from studies 1 and 2, which indicated that homeless drug users reported significantly greater drug-related problems, lower QoL and worse overall health compared to stably housed drug users, it would be expected that homeless drug users would exhibit a greater motivation to change when compared to stably housed counterparts. Study 3 revealed that homeless drug users reported higher rates of recognition of their problem compared to stably housed drug users, however, they indicated greater uncertainty about making the change as indicated by ambivalence scores. Combining the results mentioned above with their self-reported lower self-efficacy, it could be inferred that homeless drug users indicate a lower motivation to change and doubt their ability to change their problematic drug use behaviour. An unexpected finding was that homeless drug users were divided on their perception of themselves as high or low on the action stage of the stages of change (Prochaska and DiClemente, 1992). It is possible that the division was related to their perception and interpretation of ‘action’ since all the participants in the study were already accessing substitute medication, which may be perceived as ‘doing something’ about the drug use.

The current research indicated that drug users in stable housing reported higher motivation to change and greater belief in their capability to make the change to their drug use as compared to homeless counterparts. However, similar to homeless drug users, stably housed drug users were divided on their perception of themselves as high or low on the action stage of change. The unstably housed drug users were in-between homeless and unstably housed drug users on their overall motivation to change, with more similarities to stably housed group than homeless group. Specifically, the unstably housed drug users were similar to stably housed drug users on recognition of problem and ambivalence to change. Surprisingly, within the unstably housed group there were a higher number of participants who identified as being high than low on taking steps towards change.

The overall findings indicated that homeless drug users had low motivation to change with more doubts about their ability to make the change. This could be perceived as a chicken and egg scenario, where it is unclear if the homelessness contributes to poor motivation or if the poor motivation sustains homelessness for drug users by virtue of poorer outcomes in treatment. Regardless of which problem precedes the other, the resulting outcome places drug users who are homeless in a disadvantaged position. Findings from study 1 demonstrated that homeless drug users had more drug dependency and higher consumption of drugs specifically associated with homelessness such as opiates and stimulants (Fischer et al., 2006). Prior studies indicate that higher number of drugs used was directly associated with increase in readiness to change (Frausto and Bazargan-Hejazi, 2009), where increase in number of drugs could be linked to experiencing negative health and economic consequences of the drug use. Interestingly, this was not the case in the current research where the homeless group despite indicating more problems with substance use and health (in studies 1 and 2) indicated low motivation levels. It is possible that this was owing to the fact that participants in study 1 and 2 were different to the participants in study 3. All participants in study 3 were accessing SUD treatment and were prescribed substitute medication, which was not deliberate but by chance, where only those who were in treatment agreed to participate in study 3. Despite being in treatment with access to both medication and psychological interventions such as motivational intervention or cognitive behaviour therapy, homeless drug users questioned their ability to achieve change as suggested by high ambivalence and low self-efficacy. It could be possible that homeless group endured greater challenges where SUD treatment for homeless drug users can be hindered by factors such as long waiting lists, lack of transportation or support services (Velasquez et al., 2000), inflexible systems and extensive paperwork. It is likely that homeless drug users were not able to make the most of treatment by missing appointments, not accessing psychological interventions or not adhering to medication, and therefore felt less confident about the change. An alternative explanation was that the problems of homeless living such as negative emotions of stress, sleep problems, physical pain, and exposure to violence and assault (Baggett et al., 2013) eroded any benefits experienced from accessing SUD treatment.

The results of study 3 challenges the assumption that all drug users accessing treatment are at the ‘action stage’, as only the unstably housed group had a majority of drug users who perceived themselves as being in the action stage. Given the research on homeless drug users indicating their greater need for treatment, it is possible that homeless drug users in study 3 were feeling demoralised or discouraged (DiClemente and Hughes, 1990) by their situation as opposed to a lack of motivation. Most SUD treatment services are inclined towards individuals who are already motivated to change, rather than those who require assistance in enhancing or sustaining their motivation to make change (Velasquez et al., 2000).

Although previous research has investigated some factors that are associated drug users’ motivation to change, none of them have explored variability in housing circumstances with a view to understand the needs of unstably housed drug users. Overall, the findings from study 3 suggest that drug users with stable housing had higher motivation and self-efficacy than those who were homeless. The unstably housed were in-between stably housed and homeless drug users in terms of their motivation to change, with greater similarity to stably housed than homeless drug users. However, the interpretation of results needs to be considered in light of other factors such as their drug use, and their overall well-being which would provide a more robust understanding of their specific treatment needs.

6.4 Contribution to knowledge and Research recommendation

During the course of the research, it became apparent that although there is some research on homelessness and substance use, there remains a lack of consistency in the conceptualisation of homelessness (literally homeless vs living in someone else’s house). Additionally there is variability in the criteria for being considered homeless (1 day in last 30 days vs 1 day in last 90 days) and variability in sampling methods (i.e. homeless shelters) which limits the inclusion of individuals who may be ‘hidden’ homeless yielding limited understanding of broader variables (such as QoL) that affect homeless drug users. The current research ensured effective strategies to include individuals who may be considered ‘hidden’ homeless. The current research recommends further

studies that investigate the specific problems and needs of illicit drug users who are currently homeless in the UK.

It is of concern that despite being acknowledged by Public Health England (2016), there is limited understanding of the needs of drug users who are in unsuitable or unstable housing conditions, with only one study from the USA that has investigated marginally housed drug users in treatment. Enhanced understanding of the problems faced by unstably housed drug users could prevent their deterioration into complete homelessness. It is worth acknowledging that drug users who are more chaotic and experience greater problems with their drug use or health (e.g. severe and enduring mental illness) may not be represented in the current study. The current research programme recommends further research on unstably housed drug users, including those who may not be accessing SUD treatment.

Although this research programme investigated many important variables such as drug use, QoL, health and motivation to change, other significant variables in the lives of drug users were not investigated such as involvement with criminal activities, training and employment needs. Therefore, further research that examines the association between housing circumstances, criminal activities, training and employment would provide further understanding on the challenges faced by drug users in variable housing conditions.

On reflection, the current research programme was apt in using a quantitative approach for a preliminary investigation into an area that has not been investigated previously. The methodology was also considered to be a more pragmatic way of investigating several variables simultaneously that are important in the lives of drug users. However, it is recommended that further research that utilises a qualitative design to explore some of the unanswered questions such as difference in QoL or motivation between the drug users in variable housing circumstances. An interesting area to explore would be to gain an understanding of factors that influenced the motivation to change in drug users, the role of housing in their motivation levels, their perceptions of what they wanted to change or improve, and how they perceived their progress in treatment.

6.5 Implications for Clinical Practice

The results of the current research indicate that homeless drug users evidently present with distinct needs to stably housed drug users, exhibiting greater drug dependency, more extensive drug use, lower QoL, significantly worse physical and psychological health and low motivation levels. Consistent with findings from other countries and reports from drug services in the UK, homeless drug users present several challenges in engaging with SUD treatment. The research steered away from criminalisation of drug users towards a more person-centred approach of enhancing understanding about the problems faced by them. The findings from the current research programme highlight specific areas that both drug and health services could target, such as providing greater harm minimisation around SUD and implementation of effective psychological interventions that improve physical and psychological health by reducing depression, anxiety and stress. The utilisation of psychosocial interventions that do not require lengthy assessments or unrealistic time commitments would be beneficial to enhance engagement such as brief interventions, single session therapies and trauma informed approaches. The study recommends the provision of extra support for drug users who have a greater risk of disengaging from services such as those who are homeless or unstably housed by offering more flexibility, improving access to health care and housing services, and employing brief and opportunistic interventions that can cater to their individual lifestyles.

Previous studies have identified unstably housed drug users as ‘at risk of homelessness’ (Eyrich-Garg et al., 2008; Public Health England, 2016), indicating a need for timely and effective intervention to prevent their deterioration into complete homelessness. Services that have any level of engagement with unstably housed drug users should prioritise targeted interventions, individualised care plans and a treatment protocol that prevent them from becoming homeless.

The present research programme investigated ‘unstably’ housed drug users, a category that has indicated distinct needs to both homeless and stably housed drug users. More specifically, the findings indicated that while the unstably

housed drug users were similar to stably housed drug users in terms of their drug use, they were more similar to homeless drug users in terms of their health and well-being. This suggests that drug users in variable housing circumstances may indicate unique problems with regards to their drug use or health both of which could be associated with motivation levels and should be taken into consideration in treatment planning and in designing the appropriate interventions for drug users.

Most addiction services in the UK frequently assess motivation levels as a part of SUD treatment, but the findings of the research programme recommends that the assessment of motivation should take into account housing circumstances of drug users. This challenges the assumption that all drug users in substance use treatment have the same level of motivation. Additionally, the findings from the research programme recommend that an investigation of self-efficacy would enable drug services to offer a more suitable intervention that matches the specific needs of the individual.

The results of the current research emphasise that recovery from drug addiction is not only about addressing drug use (HM Government, 2010), but should include broader aspects of health, well-being and self-efficacy about the recovery. Despite this, many drug services discharge clients once their drug use has been addressed, leaving them in a vulnerable position with unmet needs. The current research suggests the need for evaluation of readiness for discharge from treatment in addition to longer-term after care, and improved access to community recovery resources.

6.6 Evaluation of the research studies

One of the main challenges in the research programme was the data collection process, as gathering primary data from hard-to-access population was challenging at multiple levels, often resulting in frequent no-shows. Moreover, the recruitment of homeless (and occasionally unstably housed drug users) proved to be a significant challenge with several barriers hindering their participation in research. Some of these included the lack of a stable address or phone, difficulty in getting to appointments at services and their self-consciousness about not having clean clothes to attend data collection

appointments. Another challenge was the lack of awareness among the wider community about the significance of conducting local research based on UK population. Several services that cater to homeless individuals, apart from Forward Leeds, declined to participate in the study or grant access to potential participants for the researcher.

One of the limitations of the research is that difference between males and females were not analysed in all three studies. It is possible that future studies with larger sample of females would provide greater insight into gender differences within drug users in different housing categories.

During data collection for study 3, an unforeseen challenge was imposed by the COVID-19 pandemic. Restrictions imposed by University of Leeds and Forward Leeds meant the researcher had to rely on clinical staff at Forward Leeds to collect the data. The service staff who volunteered to participate in data collection did so with the goodwill of their heart and were not compensated for their time. However, this impacted on the number of staff who agreed to volunteer for the research study, which elongated the process of data collection. Another consequence was that during study 3, the participants did not provide detailed information about drug amounts and frequency of use to the clinical staff. It is plausible that many drug users were not allayed by the confidentiality policy, and withheld information about their drug use behaviour for fear of information being shared by the research programme to Forward Leeds prescribing teams. Although the research programme provided unique insights about the problems faced by homeless drug users, unlike previous studies on homelessness (Eyrich-Garg et al., 2008; Upshur et al., 2014) the current research programme did not gather information on the duration of homelessness or the number of episodes of homelessness, where greater duration of homelessness is associated the prioritisation of drug treatment (Upshur et al., 2014).

The data collected in the research programme was collected from a drug service in Leeds (covering North, East, South, West and city centre), so the sample may not be entirely generalizable to other populations of SUD patients in other parts of the country. However, it has been highlighted that this study sought to fill a gap in addiction research in the North of England that specifically examined

housing conditions of primary illicit drug users (Black, 2020;2021). The findings from the current research programme could be considered a starting place for inciting further research in other parts in the North of England and UK with high levels of drug use and deprivation.

6.7 Conclusion

Drug users who are homeless experience disadvantage at multiple levels with many of the causes and consequences of drug use and homelessness being entwined. Limited number of studies that compare homeless and housed drug users, are mostly based in North America and Australia, where the social system and drug treatment environments are different to the UK. The lack of a universal definition of homelessness and inconsistencies in sampling techniques makes the direct application of prior studies to a UK population challenging. The main objective of the current research was to provide a comprehensive understanding of the relationship between drug users' housing circumstances to their drug dependency, drug use, quality of life, physical and mental health, and motivation to change. In response to a recommendation by Public Health England (2016), this current research also investigated the previously neglected category of drug users residing in unstable housing conditions.

The findings of the research programme indicated that as compared to stably housed drug users, homeless drug users experienced significant disadvantage with greater drug dependency, higher drug use, lower QoL and worse physical and psychological health as evidenced by greater severity in anxiety, depression and stress. Despite indicating a greater need for engagement with treatment on the basis of findings reported above, the homeless drug users reported lower levels of motivation and doubted their capacity to succeed in drug treatment. These findings highlight a need for effective motivational interventions for homeless drug users, targeted towards harm minimisation and improvement in physical and psychological health, all of which may enhance their engagement and improve their chances of success in treatment. Importantly, the findings advocate the recognition of a lack of housing and associated health and well-being problems as a barrier for successful engagement with drug treatment.

The research programme demonstrated some interesting findings about drug users in unstable housing conditions, where they shared some, but not all of the problems faced by homeless drug users. In terms of overall well-being and social satisfaction, unstably housed drug users were better off than homeless drug users but worse off than stably housed drug users. Regarding drug use behaviour, unstably housed drug users were similar to stably housed drug users, but their psychological health was similar to homeless counterparts, as evidenced by greater severity in depression, anxiety and stress. On motivation to change, drug users in unstable housing circumstances were mostly similar to stably housed drug users. Further research is recommended to investigate factors that influence motivation to change in drug users residing in variable housing conditions. The current research findings indicate that drug users in unstable housing conditions are at particular risk of becoming completely homeless. Furthermore, unstable housing in drug users indicates the need for timely and effective interventions which recognise their needs are different to those in stable housing or homeless conditions.

The findings from this research programme suggest that drug users are a heterogeneous group with differences in drug use behaviour, health, well-being and motivation to change. Understanding these differences can assist in identifying some of the specific challenges faced by drug users in different housing circumstances. Importantly, this information can also be particularly helpful for drug services at both treatment planning and treatment delivery stages as a means to intervene prior to further deterioration for both homeless and unstably housed groups. It is also important to avoid neglecting stably housed drug users as research suggests that housing circumstances for drug users are changeable, where stably housed drug users may spiral down towards worse living conditions. To reiterate, individuals with current drug use who are housed require ongoing support to prevent them from further deterioration. Although the mere provision of housing cannot resolve the problem of substance misuse, it is certainly a significant factor in facilitating recovery from this problem.

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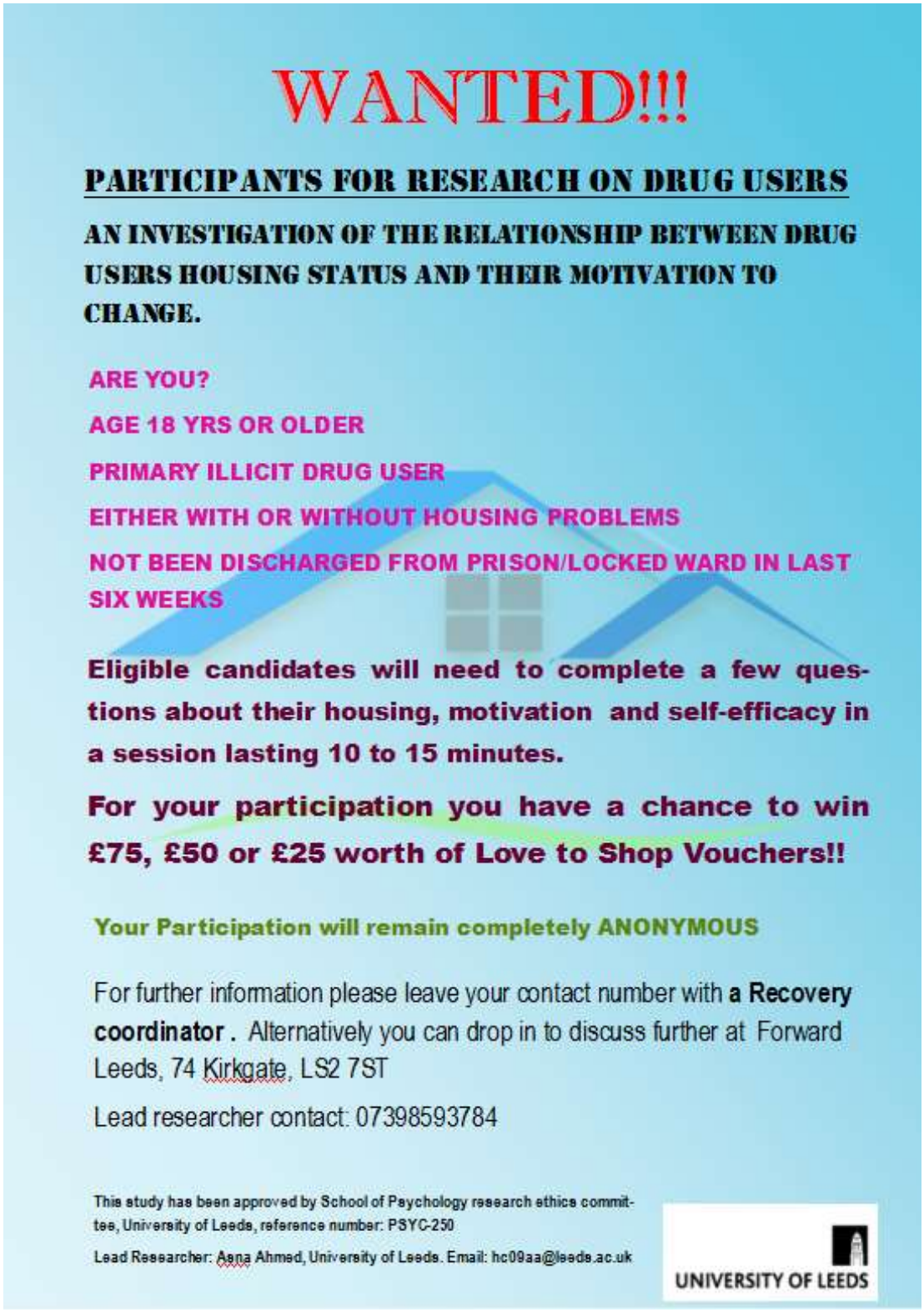
APPENDICES

Appendix 1.1a: Poster for study 1 and 2

Appendix 1.1b: Poster for study 3



Appendix 1.2a: Information for participants for study 1 and 2

Title: An investigation of the relationship between drug users housing status and their health and wellbeing.

Information sheet
Thank you for taking an interest in this project. Please read this information sheet carefully before deciding whether or not you want to take part.

What is this project about?
This study has been approved by School of Psychology Research Ethics Committee at the University of Leeds. This study aims to help us understand the effect of accommodation problems on individuals who use illicit drugs. To do this the study will collect information about your accommodation status (whether or not you are having any housing problems), your drug use and your physical and mental health. To date, there has been very little research on the effect of accommodation status on drug users, so the information from this study will provide useful information for those who provide treatment services to drug users

Why have I been chosen?
It is important that people with first-hand experience of using drugs are involved in the research because you will be able to express and share your views about an important topic in a confidential environment. The information that is gained from your views will make significant contributions to further research in the field of addictions. It could also be beneficial to other drug related research especially around improving treatment outcomes for service users.

Do I have to take part?
No. Taking part is voluntary and it is up to you to decide whether or not to take part. If you do, you will be given this information sheet to keep. Then you will be asked to sign a consent form. Even after signing the consent form, you are free to decide not to take part and you do not have to give us a reason for doing so. However please note that the interview data will be anonymised once it is stored on the computer. At this point you will not be able to withdraw from the study as it will be impossible to identify your data.

What will it involve?
If you agree to take part in this project, you will be asked to attend a short (40-50 minute) meeting with me during which you will be asked to complete four questionnaires. You can both read and complete these yourself or I can read them to you and note your answers on the questionnaire sheets. The meeting will take place in a private room in a community setting which will be easily accessible by public transport.

What information will be collected and what will it be used for?
The short questionnaires will simply ask you about your drug use, and your physical and mental health. Your answers will be recorded on paper sheets that will have a unique personal identifier number (PIN) that you will generate. Therefore no-one except yourself will know that the data is from you. All the questionnaires will be stored in a locked cabinet that is only accessed by the researcher. All information related to data will be stored securely in a locked cabinet at the University of Leeds.

All information is treated as strictly confidential implying that name, address, descriptions will not be used at any time. If you wish to withdraw from the study you can inform the researcher and withdraw prior to the date (31/12/17). The results of the project will be written in a report and submitted to my tutor (Dr Amanda Harrison), but participants will not be identified in any way. The anonymised data will be analysed and the results will be reported in conference presentations and publications so that others can use the results to develop treatment plans. At no point of time during presentations or publication will the results refer to any names or PINs.

When will I take part?
Once you have expressed an interest in this study you can let a member of staff know. The researcher will either contact you in person or by telephone if we have been provided with a number. A date and time for the meeting that is convenient for you will be arranged at least 24 hours after you have been recruited for the study

What are the possible risks of taking part?
Some of the questionnaires may ask questions that could be sensitive or upsetting. If you begin to feel distressed during the interview you will be able to withdraw from taking part immediately. You will also be able to speak to the 'duty worker' if you need any support or advice.

What are the possible benefits of taking part?
The researcher will provide you a £5 love to shop voucher to thank you for your time and effort. The information you provide will make an important contribution to our understanding of the relationship between accommodation problems and the mental and physical health of illicit drug users. This is an excellent opportunity for service users/non service users to participate in research that could guide and improve service delivery.

Thank you for taking the time to read this information sheet and considering this study.

If at any point you have any questions or concerns regarding this study, please contact the researcher below:

University of Leeds, Lead Researcher: Asna Ahmed Tel: 0113 8872477
hc09aa@leeds.ac.uk
University of Leeds, Principal Investigator: Dr Amanda Harrison Tel: 0113 3436689
a.a.harrison@leeds.ac.uk
This study has been approved by School of Psychology Research Ethics Committee at the University of Leeds.

Ethics Reference: Approval Date:

Appendix 1.2b Information for participants for study 3

Information for Participants

Title: An Investigation of the relationship between drug users housing status and their self-efficacy and motivation to change.

Information sheet
Thank you for taking an interest in this project. Please read this information sheet carefully before deciding whether or not you want to take part.

What is this project about?
This study has been approved by School of Psychology Research Ethics Committee at the University of Leeds. This study aims to help us understand the effect of housing conditions on the motivation and self-efficacy of individuals who use illicit drugs. To do this the study will collect information about your accommodation status (whether or not you are having any housing problems), drug use, motivation to make change and your self-efficacy (confidence that you are capable of making change). To date, there has been very little research on the effect of accommodation status on drug users, so the information from this study will provide useful information for those who provide treatment services to drug users.

Why have I been chosen?
It is important that people with first-hand experience of using drugs are involved in the research because you will be able to express and share your views about an important topic in a confidential environment. The information that is gained from your views will make significant contributions to further research in the field of addictions. It could also be beneficial to other drug related research especially around improving treatment planning and treatment outcomes for service users.

Do I have to take part?
No. Taking part is voluntary and it is up to you to decide whether or not to take part. If you do, you will be given this information sheet to keep. Then you will be asked to sign a consent form. Even after signing the consent form, you are free to decide not to take part and you do not have to give us a reason for doing so. However please note that the questionnaire data will be anonymised once it is stored on the computer. At this point you will not be able to withdraw from the study as it will be impossible to identify your data.

What will it involve?
If you agree to take part in this project, you will be asked to attend a short (15-20 minute) meeting with a select staff member at Forward Leeds, during which you will be asked to complete a few questionnaires. For completion of the questionnaires, you can read and complete these yourself or they can be read aloud to you and your responses will be notes on the questionnaire sheet. The questionnaires only require tick boxes so minimal writing is required. The meeting will take place in a private room in a community setting which will be easily accessible. Please let us know if you would rather complete the questionnaire remotely via phone.

What information will be collected and what will it be used for?
The questions you will be asked are about your age, gender, race, housing status, drug use, mental health, self-efficacy and motivation to make change. Your answers will be recorded on paper, where each paper sheet will have a unique personal identifier number (PIN) that would be generated by you. Therefore no-one except yourself will know that the data is from you. All the notes and questionnaires will be stored in a locked cabinet that is only accessed by the select staff and researcher. All information related to data will be stored securely in a locked cabinet at the University of Leeds.

All information is treated as strictly confidential implying that name, address, descriptions will not be used at any time. If you wish to withdraw from the study you can inform the researcher and withdraw prior to the date (31/12/21). The results of the project will be written in a report and submitted to my tutor (Dr Amanda Harrison), but participants will not be identified in any way. The anonymised data will be analysed and the results will be reported in conference presentations and publications to share the research findings with other scientists and treatment co-ordinators. This will further increase the understanding of the effects of housing conditions on treatment and recovery whilst guiding treatment planning for drug users with different needs. At no point of time during presentations or publication will the results refer to any individual names or PINs.

When will I take part?
Once you have expressed an interest in this study you can let a member of staff know, following this you will either be contacted in person or by telephone for a screening if we have been provided with a number. A date and time

for the meeting that is convenient for you will be arranged at least 24 hours after you have been recruited for the study

What are the possible risks of taking part?
There are no known risks of taking part. However, some of the questions or the questionnaire may ask about an issue that could be perceived by some as sensitive or upsetting. If you begin to feel distressed during the data collection session you will be able to withdraw from taking part immediately. You will also be able to speak to the 'duty worker' if you need any support or advice.

What are the possible benefits of taking part?
Participation in the study will enrol you in a prize draw to thank you for your time and effort. On completion of the data collection, each participant will be entered into a prize draw with a 1st prize of £50 value love-to-shop voucher, a 2nd prize of £25 value love to shop and a 3rd prize of £15 value love to shop voucher.
The information you provide will make an important contribution to our understanding of the relationship between accommodation problems and the motivation of illicit drug users. This is an excellent opportunity for service users/non service users to participate in research that could guide and improve service delivery.

Thank you for taking the time to read this information sheet and considering this study.

If at any point you have any questions or concerns regarding this study, please contact the researcher below:

Asna Ahmed **Tel: 07398593784 *** **hc09aa@leeds.ac.uk**

Dr Amanda Harrison **a.a.harrison@leeds.ac.uk**

Ethics Reference: PSYC-250 **Approval Date: 08/04/21**

***This mobile number was only utilised for research purposes for Study 3, post completion of data collection and analysis the number was no longer used.**

Appendix 1.3: Initial screening form

1. Have you been in hospital/prison or a locked ward in the last 6 weeks?

2. Do you have any pending charges/cautions?
(This question is a part of the risk screening which is required by the FL organisation for health and safety reasons)

3. Do you have a diagnosed mental health problem? If yes, are you currently accessing a specialist service for this problem?
(E.g. Schizophrenia, depression, Bipolar disorder, PTSD)

4. Are you aged 18 or over?

5. What is your primary drug?
(E.g. Heroin, cocaine, alcohol, cannabis)

6. When was the last time you used any drugs?

7. What is your current accommodation status?
(E.g. Homeless, No housing problems, Yes housing problems)

8. Do you have any disabilities/special needs that can impact on accessing the premises?

9. Do you need any support in reading, writing and understanding English?

Appendix 1.4: Permission for research from Forward Leeds

Forward Leeds
72 Kirkgate
Leeds
LS2 7DJ

18.01.16

Dear Asna

Subject: Consent to undertake Research study at Forward Leeds Premises

In response to your last letter, I am writing to update you that I have discussed the matter with DISC HR and Senior Managers Cath Brogan and Lee Wilson. Consent has been given for you to undertake your research study at the three Forward Leeds premises.

Yours Sincerely

Eleanor Fenwick
Lead Practitioner

Appendix 1.5: Personal Identifier Number (PIN) Generation Form

To generate Code please use **first** and **third** letters of surname + the first four numbers of your date of birth + your gender.

e.g.

Gender: Male

Name : James Smith

Date of Birth: 23rd March 1988

PIN: SI2303M

Your PIN:

Appendix 1.6: Informed consent form

Name of Researcher: Asna Ahmed

Initial the box if you agree with the statement to the left

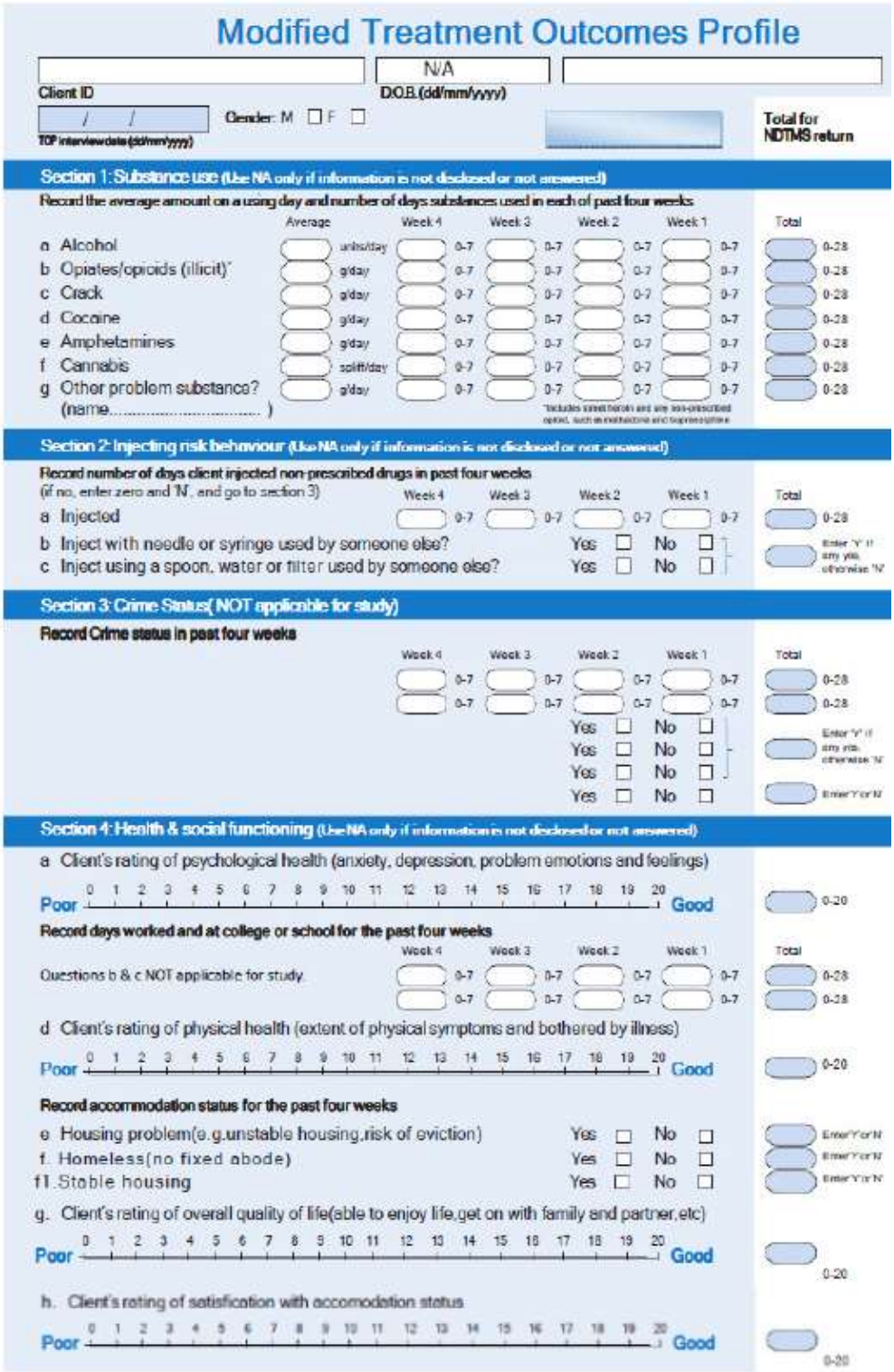
1. I confirm that I have read and understand the information sheet dated [insert date] explaining the above research project. ☐
2. I have had the opportunity to ask questions about the project. ☐
3. I understand that my participation is voluntary and that I am free to withdraw without giving any reason up until the point at which the data is analysed (31/12/17 for studies 1 and 2 and 31/12/21 for study 3) after which research team will not be able to identify data to remove it. ☐
4. I am free to decline should I not wish to answer any particular question or questions. ☐
5. I understand that all data I provide for the study will be stored anonymously. Therefore it will not be possible for anyone to link my personal information with any other data I provide in this study. ☐
6. I give permission for members of the research team to have access to my anonymised responses. ☐
7. I understand that the anonymised results of the study will be shared with others through publication and conference presentations. ☐
8. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research. ☐
9. I agree to take part in the above research project and will inform the principal investigator should my contact details change. ☐

_____	_____	_____
Name of participant	Date	Signature
_____	_____	_____
Lead researcher	Date	Signature

If at any point you have any questions or concerns regarding this study, please contact the researcher below:

University of Leeds, Lead Researcher: Asna Ahmed Tel: 0113 8872477 hc09aa@leeds.ac.uk
University of Leeds, Principal Investigator: Dr Amanda Harrison Tel: 0113 3436689
a.a.harrison@leeds.ac.uk
This study has been approved by School of Psychology Research Ethics Committee at the University of Leeds.
Ethics Reference: Approval Date:

Appendix 2.0 Modified version of Treatment Outcome Profile Survey (TOPS)



Modified Treatment Outcomes Profile

Client ID | N/A D.O.B.(dd/mm/yyyy) | Gender: M ☐ F ☐ | TOP interview date (dd/mm/yyyy) | Total for NDTMS return

Section 1: Substance use (Use NA only if information is not disclosed or not answered)

Record the average amount on a using day and number of days substances used in each of past four weeks

	Average	Week 4	Week 3	Week 2	Week 1	Total
a Alcohol	units/day	0-7	0-7	0-7	0-7	0-28
b Opiates/opioids (illicit)*	g/day	0-7	0-7	0-7	0-7	0-28
c Crack	g/day	0-7	0-7	0-7	0-7	0-28
d Cocaine	g/day	0-7	0-7	0-7	0-7	0-28
e Amphetamines	g/day	0-7	0-7	0-7	0-7	0-28
f Cannabis	spliff/day	0-7	0-7	0-7	0-7	0-28
g Other problem substance? (name.....)	g/day	0-7	0-7	0-7	0-7	0-28

*Includes street heroin and any non-prescribed opioid, such as methadone and buprenorphine

Section 2: Injecting risk behaviour (Use NA only if information is not disclosed or not answered)

Record number of days client injected non-prescribed drugs in past four weeks (if no, enter zero and 'N', and go to section 3)

	Week 4	Week 3	Week 2	Week 1	Total
a Injected	0-7	0-7	0-7	0-7	0-28
b Inject with needle or syringe used by someone else?	Yes ☐ No ☐				Enter 'Y' if any yes, otherwise 'N'
c Inject using a spoon, water or filter used by someone else?	Yes ☐ No ☐				

Section 3: Crime Status(NOT applicable for study)

Record Crime status in past four weeks

	Week 4	Week 3	Week 2	Week 1	Total
	0-7	0-7	0-7	0-7	0-28
	0-7	0-7	0-7	0-7	0-28
	Yes ☐ No ☐				Enter 'Y' if any yes, otherwise 'N'
	Yes ☐ No ☐				
	Yes ☐ No ☐				
	Yes ☐ No ☐				Enter 'Y' or 'N'

Section 4: Health & social functioning (Use NA only if information is not disclosed or not answered)

a Client's rating of psychological health (anxiety, depression, problem emotions and feelings)

Poor 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 Good — 0-20

Record days worked and at college or school for the past four weeks

	Week 4	Week 3	Week 2	Week 1	Total
Questions b & c NOT applicable for study	0-7	0-7	0-7	0-7	0-28
	0-7	0-7	0-7	0-7	0-28

d Client's rating of physical health (extent of physical symptoms and bothered by illness)

Poor 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 Good — 0-20

Record accommodation status for the past four weeks

e Housing problem(e.g.unstable housing,risk of eviction) Yes ☐ No ☐ — Enter 'Y' or 'N'

f. Homeless(no fixed abode) Yes ☐ No ☐ — Enter 'Y' or 'N'

f1.Stable housing Yes ☐ No ☐ — Enter 'Y' or 'N'

g. Client's rating of overall quality of life(able to enjoy life,get on with family and partner,etc)

Poor 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 Good — 0-20

h. Client's rating of satisfaction with accomodation status

Poor 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 Good — 0-20

Appendix 2.1 PHQ-9, GAD-7 and Medication questionnaire

PHQ-9 , GAD-7 AND T-STATUS QUESTIONNAIRE

Client ID: _____ Date: _____

In the last 2 weeks, how often have you been bothered by any of the following problems?

		YOUR ANSWER			
		Never, not at all	Sometimes, several days	Often, more than half the days	Always, or nearly every day
1	Little interest or pleasure in doing things?	☐	☐	☐	☐
2	Feeling down, depressed, or hopeless?	☐	☐	☐	☐
3	Trouble falling or staying asleep, or sleeping too much?	☐	☐	☐	☐
4	Feeling tired or having little energy?	☐	☐	☐	☐
5	Poor appetite or overeating?	☐	☐	☐	☐
6	Feeling bad about yourself - or that you are a failure or have let yourself or your family down?	☐	☐	☐	☐
7	Trouble concentrating on things, such as reading the newspaper or watching television?	☐	☐	☐	☐
8	Moving or speaking so slowly that other people could have noticed? Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual?	☐	☐	☐	☐
9	Thoughts that you would be better off dead, or of hurting yourself in some way?	☐	☐	☐	☐
10	Feeling nervous, anxious or on edge?	☐	☐	☐	☐
11	Not being able to stop or control worrying?	☐	☐	☐	☐
12	Worrying too much about different things?	☐	☐	☐	☐
13	Trouble relaxing?	☐	☐	☐	☐
14	Being so restless that it is hard to sit still?	☐	☐	☐	☐
15	Becoming easily annoyed or irritable?	☐	☐	☐	☐
16	Feeling afraid as if something awful might happen?	☐	☐	☐	☐
17	If you are taking medication for addiction problems, Has there been any change in your medication dose?	I'm not on medication ☐	My dose stayed the same ☐	My dose reduced ☐	My dose increased ☐
18	Are you taking prescribed antidepressants for your mental health?	I'm not on medication ☐	My dose stayed the same ☐	My dose reduced ☐	My dose increased ☐

To be completed by staff:

PHQ-9 ☐ GAD-7 ☐ T-Status ☐

Appendix 2.2 Perceived Stress Scale (PSS)

Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts **during the last month**. In each case, you will be asked to indicate by circling *how often* you felt or thought a certain way.

Name _____ Date _____

Age _____ Gender (*Circle*): **M F** Other _____

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
2. In the last month, how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
3. In the last month, how often have you felt nervous and "stressed"?	0	1	2	3	4
4. In the last month, how often have you felt confident about your ability to handle your personal problems?	0	1	2	3	4
5. In the last month, how often have you felt that things were going your way?	0	1	2	3	4
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
7. In the last month, how often have you been able to control irritations in your life?	0	1	2	3	4
8. In the last month, how often have you felt that you were on top of things?	0	1	2	3	4
9. In the last month, how often have you been angered because of things that were outside of your control?	0	1	2	3	4
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

Please feel free to use the *Perceived Stress Scale* for your research.

Mind Garden, Inc.
info@mindgarden.com
www.mindgarden.com

References

The PSS Scale is reprinted with permission of the American Sociological Association, from Cohen, S., Kamarck, T., and Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 386-396.

Cohen, S. and Williamson, G. Perceived Stress in a Probability Sample of the United States. Spacapan, S. and Oskamp, S. (Eds.) *The Social Psychology of Health*. Newbury Park, CA: Sage, 1988.

Appendix 2.3 Leeds Dependence Questionnaire (LDQ)

Leeds Dependence Questionnaire - LDQ

Here are some questions about the importance of alcohol or other drugs in your life. Think about the main substance you have been using over the **last 4 weeks** and tick the closest answer to how you see yourself

	Never 0	Sometimes 1	Often 2	Nearly Always 3
Do you find yourself thinking about when you will next be able to have another drink or take more drugs?	☐	☐	☐	☐
Is drinking or taking drugs more important than anything else you might do during the day?	☐	☐	☐	☐
Do you feel that your need for drink or drugs is too strong to control?	☐	☐	☐	☐
Do you plan your days around getting and taking drink or drugs?	☐	☐	☐	☐
Do you drink or take drugs in a particular way in order to increase the effect it gives you?	☐	☐	☐	☐
Do you drink or take drugs morning, afternoon and evening?	☐	☐	☐	☐
Do you feel you have to carry on drinking or taking drugs once you have started?	☐	☐	☐	☐
Is getting an effect more important than the particular drink or drug you use?	☐	☐	☐	☐
Do you want to take more drink or drugs when the effects start to wear off?	☐	☐	☐	☐
Do you find it difficult to cope with life without drink or drugs?	☐	☐	☐	☐

Appendix 2.4 SOCRATES 8D

CASAA Research Division*
9/95

Personal Drug Use Questionnaire
(SOCRATES 8D)

INSTRUCTIONS: Please read the following statements carefully. Each one describes a way that you might (or might not) feel ***about your drug use***. For each statement, circle one number from 1 to 5, to indicate how much you agree or disagree with it ***right now***. Please circle one and only one number for every statement.

	NO! Strongly Disagree	No Disagree	? Undecided or Unsure	Yes Agree	YES! Strongly Agree
1. I really want to make changes in my use of drugs.	1	2	3	4	5
2. Sometimes I wonder if I am an addict.	1	2	3	4	5
3. If I don't change my drug use soon, my problems are going to get worse.	1	2	3	4	5
4. I have already started making some changes in my use of drugs.	1	2	3	4	5
5. I was using drugs too much at one time, but I've managed to change that.	1	2	3	4	5
6. Sometimes I wonder if my drug use is hurting other people.	1	2	3	4	5
7. I have a drug problem.	1	2	3	4	5
8. I'm not just thinking about changing my drug use, I'm already doing something about it.	1	2	3	4	5
9. I have already changed my drug use, and I am looking for ways to keep from slipping back to my old pattern.	1	2	3	4	5
10. I have serious problems with drugs.	1	2	3	4	5

	NO! Strongly Disagree	No Disagree	? Undecided or Unsure	Yes Agree	YES! Strongly Agree
11. Sometimes I wonder if I am in control of my drug use.	1	2	3	4	5
12. My drug use is causing a lot of harm.	1	2	3	4	5
13. I am actively doing things now to cut down or stop my use of drugs.	1	2	3	4	5
14. I want help to keep from going back to the drug problems that I had before.	1	2	3	4	5
15. I know that I have a drug problem.	1	2	3	4	5
16. There are times when I wonder if I use drugs too much.	1	2	3	4	5
17. I am a drug addict.	1	2	3	4	5
18. I am working hard to change my drug use.	1	2	3	4	5
19. I have made some changes in my drug use, and I want some help to keep from going back to the way I used before.	1	2	3	4	5

Appendix 2.5: General self-efficacy questionnaire

General Self-Efficacy Scale (GSE)

	Not at all true	Hardly true	Moderately true	Exactly true
1. I can always manage to solve difficult problems if I try hard enough	☐	☐	☐	☐
2. If someone opposes me, I can find the means and ways to get what I want.	☐	☐	☐	☐
3. It is easy for me to stick to my aims and accomplish my goals.	☐	☐	☐	☐
4. I am confident that I could deal efficiently with unexpected events.	☐	☐	☐	☐
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.	☐	☐	☐	☐
6. I can solve most problems if I invest the necessary effort.	☐	☐	☐	☐
7. I can remain calm when facing difficulties because I can rely on my coping abilities.	☐	☐	☐	☐
8. When I am confronted with a problem, I can usually find several solutions.	☐	☐	☐	☐
9. If I am in trouble, I can usually think of a solution	☐	☐	☐	☐
10. I can usually handle whatever comes my way.	☐	☐	☐	☐

Appendix 2.6: Participant data information sheet for study 3

All participants must be Primary illicit adult drug user, please give consent form and PIN form*.

PIN:

Age: Ethnicity: Data collection: Phone Face to face contact

Gender: Male Female Transgender Other Do not want to disclose

Drug use information: Record the average amount of drugs on a using day and the number of substances used in the past 4 weeks.

Alcohol	Units	week 4	week 3	week 2	week 1	Total
Opiates/opioids (illicit)	gms/day	week 4	week 3	week 2	week 1	Total
Crack	gms/day	week 4	week 3	week 2	week 1	Total
Cocaine	gms/day	week 4	week 3	week 2	week 1	Total
Amphetamine	gms/day	week 4	week 3	week 2	week 1	Total
Cannabis	gms/day	week 4	week 3	week 2	week 1	Total

Other problem substance

Name	grams/day	week 4	week 3	week 2	week 1	Total

Are you in structured treatment?

On opiate substitute medication YES NO

Specify medication: Buprenorphine Methadone Other

Do you receive psychosocial interventions as part of treatment? YES NO

How long have you been in treatment?

Less than 1 yr. 1-3 yrs. 3-6 yrs. Over 6 years

Do you have a diagnosis of mental health problems? Anxiety Depression Other (please specify)

Are you on prescribed medication for mental health problems?

Please specify which one:

What is your current housing status?

No housing problems or stably housed

Unstable housing condition (risk of eviction, damp, unsuitable conditions)

No fixed abode or homeless (temporary accommodation, sofa surfing, rough sleeping)

Have you been housed due to Covid-19 pandemic? If yes, which one:

B&B/Hotel House Shelter Other (please specify)

How long have you been in current housing (i.e. B&B, shelter?)

*PIN reminders:

To generate Code please ask the client to use first and third letters of surname + the first four numbers of their date of birth + their gender.

e.g.

Gender: Male

Name : James Smith

Date of Birth: 23rd March 1988

PIN: SI2303M

Your PIN:

Please remember your unique PIN to be entered in the prize draw to win.

This page has been left black intentionally.