

Improving Addiction Treatment Retention for Young People: A Research Report from the National Addiction Centre

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DISCLAIMER

A findings, conclusions or opinions are those of the authors and are not to be attributed to ALAC.

EXECUTIVE SUMMARY

Retaining youth in alcohol and other drug (AOD) treatment is seen as an important step in improving treatment outcomes – yet there are high-drop out rates of youth from AOD treatment services throughout New Zealand.

This study is the first in New Zealand to investigate the factors associated with AOD treatment retention among youth. Conducted among a group of young people who attended eight youth AOD treatment services in New Zealand during 2003 and 2004, it examines a range of treatment modalities, including day, residential and outpatient settings using mainstream, kaupapa Māori and Pasifika approaches.

The study did not achieve its recruitment target of 140 treatment participants owing mainly to high staff turnover in the services involved in the study and difficulties in locating clients. Instead, it presents data for the 79 participants who agreed to complete face-to-face interviews, and data from file searches of 105 non-participants – a total of 184 young people who had attended these services.

Findings from this study for youth have contributed to a greater understanding of the factors associated with treatment retention for youth. The study also provides a profile of the young people who use AOD treatment services in New Zealand, indicating that they present with a range of complex needs including substance misuse issues, psychiatric disorders, family dysfunction, disengagement from school and criminality. It is important to recognise this complexity to ensure these services are adequately funded and that staff receive appropriate training and support.

The study shows that ‘fixed client characteristics’ such as sociodemographics have little or no association with longer stays in treatment – and that instead, ‘dynamic client characteristics’ and ‘programme-related variables’ are more relevant.

1. Dynamic client characteristics include being internally motivated to attend treatment and having an expectation that treatment will be helpful in producing positive general life outcomes and positive AOD-related outcomes.
2. Programme-related variables include having a good relationship with programme staff and feeling involved in the treatment process and about decisions being made during treatment. Additionally, an emerging trend relates to feeling connected to the programme and experiencing the programme as fun.

The emergence of dynamic client characteristics and programme-related variables as factors associated with treatment retention highlights the importance of the interaction between clients and staff in treatment programmes as well as the potential for service providers to influence client engagement and retention and contribute to positive client outcomes. By being aware of these dynamic client characteristics and programme-related variables, service providers are empowered to work alongside any young person who comes to their service.

The seven key recommendations from this research highlight issues that service providers and funders need to address to improve youth retention in AOD treatment services. The report also discusses areas of future research that could improve our understanding of the factors associated with youth AOD treatment retention and outcomes.

INTRODUCTION

Substance use, and its potential harms, is a major concern for many adults living and working with young people. Some experimentation with drugs (including alcohol) and other risk behaviours is common among young people and may be considered 'normal'. However, as outlined below, there is a distinct difference between 'normal' experimentation and the serious drug use and co-existing problems experienced by many of the young people who attend alcohol and other drug (AOD) treatment services in New Zealand.

AOD treatment services for youth have been established in recent years in response to a growing recognition of the need to provide youth specific AOD treatment. In conjunction with the development of such services is the need to determine best practice for working with youth to ensure optimal treatment outcomes. Treatment retention has been identified as an important mechanism in improving treatment outcomes (Catalano, Hawkins and Wells ,1990-1991) for youth. However, while retaining youth in treatment is an important step in improving treatment outcomes, the factors associated with treatment retention among youth are not well understood.

This report begins to address this gap firstly, by providing a review of the existing international literature on youth retention in AOD treatment and secondly, by presenting the findings of a research project conducted among a group of young people who attended one of eight youth AOD treatment services in New Zealand during 2003 and 2004.

PART 1

LITERATURE REVIEW

This literature review has four main sections:

- A brief definition of important terms used in this report
- A summary of the epidemiology of substance use, abuse and dependence, both internationally and among New Zealand adolescents.
- A summary of the treatment of adolescent substance use problems, including an overview of AOD treatment services for youth in New Zealand.
- An overview of treatment efficacy and retention in youth AOD treatment.

1.1 DEFINITION OF TERMS

1.1.1 Adolescence

What is 'adolescence'? Adolescence is a transitional period between childhood and adulthood, which begins biologically with the onset of puberty and ends with the appearance of social independence. The gap between these two markers is increasing, with puberty gradually beginning earlier in developed countries such as New Zealand and the age of social independence being delayed in response to growing societal complexity. This is often reflected in delayed entry in to the workforce and/or an increased period of financial dependence on parents while adequate educational or job training skills are obtained.

The various definitions of adolescence, inclusive of late childhood and early adulthood, span the age range 10 to 25 years. The New Zealand Ministry of Health (MOH) defines youth and young people as those aged between 15 and 24 years of age, and adolescents as young people between 10 and 19 years of age, which is in line with a World Health Organization definition (WHO, 2002). According to these definitions adolescents are described as no longer children, but not yet adults and in a period of change. Early adolescence is defined as 10-13 years, while mid-adolescence is 14-15 years and later adolescence 16-19 years (WHO, 2002).

1.1.2 Substance use, abuse and dependence

'Substance' is the preferred term of the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision on* (DSM-IV-TR) (American Psychological Association [APA], 2000). It is used here synonymously with 'drug' and refers to any chemical entity used non-medically, generally self-administered, through a range of administration routes, for a rewarding psychoactive effect, which usually includes a change in mood and/or perception.

It is important to distinguish between substance use, abuse and dependence. 'Substance use' is the least differentiating and is not a diagnostic term. It does not necessarily imply the absence of abuse or dependence. 'Substance dependence' is the primary diagnostic term within the DSMIVDSM-IV-TR's Substance Use Disorders.

'Substance abuse' is a diagnosis of exclusion (of dependence). It is described as a maladaptive pattern of substance use leading to clinically significant impairment or distress within a 12-month period in the absence of substance dependence (APA, 2000). This pattern is usually accompanied by recurrent substance use, resulting in a failure to fulfil day-to-day functions (APA, 2000). In the International Classification of Diseases (ICD) (World Health Organisation [WHO], 1992), substance abuse is described as difficulty in controlling substance-taking behaviour.

The DSM-IV-TR describes the essential feature of substance dependence as a cluster of cognitive, behavioural and physiological symptoms indicating that the person continues to use the substance despite substance-related problems. Dependence is often categorised on the basis of severity (symptoms and impact on life functioning) into mild, moderate and severe. Substance use disorder is an encompassing term referring to either substance abuse or substance dependence.

The term 'addiction' is currently back in vogue and generally being used synonymously with moderate-severe dependence. The term 'substance misuse' is often used to refer to both substance abuse and substance dependence (APA, 2000).

1.2 EPIDEMIOLOGY

1.2.1 International epidemiological data

There are high prevalence rates of substance use among young people in Western countries. A recent European longitudinal study found that by the age of 18 years, 79% of participants were regular drinkers and 41% had used illicit drugs within the previous year (Parker and Egginton, 2002).

Nicotine (through cigarette smoking) is often missing from discussions about substance use in young people – yet of all the substances used, it is the most concerning in terms of harm over a lifetime. The WHO estimates that 500 million young people worldwide are regularly smoking cigarettes, but in terms of more immediate harm, alcohol is the drug of most concern in Western countries (WHO, 2002).

An American study found that 18- to 29-year-olds, who represented 27% of the population, accounted for 45% of alcohol consumption in the United States (Greenfield and Rogers, 1999). A European longitudinal study, conducted by Parker and Egginton (2002), that followed 1000 young British people aged 13 to 18 years described the progression of 'recreational' multi-substance misuse:

- By age 18 years, 33% of the cohort were long-term smokers.
- 74% of this group were regular drinkers, of which one-third drank more than twice the recommended level.
- 54% had tried an illegal drug by 18 years, with 41% having used drugs within the previous year.

Finally, a Pittsburgh study exploring youth substance misuse found that 5% of adolescents in the USA had used drugs and alcohol enough to qualify for a diagnosis of substance use disorder (Tarter, 2002).

1.2.2 New Zealand epidemiological data

New Zealand population data indicate an increase in substance use among youth in New Zealand since the mid-1980s (Habgood, Casswell, Pledger et al., 2001) and that alcohol, cannabis and nicotine remain the three most commonly used substances (MOH, 2002). Official statistics show that approximately 79% of 14- to 17-year-olds in New Zealand consume alcohol before the age of 15 years, while 10-15% try cannabis at least once by the age of 15 years (MOH, 2002). A Wellington study of 14- to 17-year-olds found that the mean age at which adolescents first started regularly drinking to intoxication was 15 years (Kalafatelis and Fryer, 2001).

Lifetime substance use by youth was identified in a nationwide telephone survey of 15- to 45-year-olds (Wilkins, Reilly and Casswell, 2005). The lifetime use prevalence of substances was high among 15- to 19-year-olds for the three main drugs: alcohol (84%), tobacco (55%) and cannabis (37%). Other drugs used included hallucinogens (13%), solvents (3%) and kava (7%).

Drugs other than the three main ones pale into insignificance. They include opioids, tranquilisers, solvents and stimulants, including methamphetamine and MDMA (ecstasy).

There have been no adolescent-specific studies, but a national survey comparison found a small overall increase in those who had tried one of these other drugs, from 22% in 1998 to 25% in 2001 (Wilkins et al., 2005). While in 1998 ecstasy was the third most popular hallucinogen in current use after magic mushrooms and LSD, by 2001 it was the most popular. 'Stimulants' mainly referred to amphetamine and methamphetamine in this study, with increases found in 15- to 17-year-olds from 2% in 1998 to 6% in 2001. There were no changes in the use of opioids, solvents or injectable drugs.

The Christchurch Health and Development Study (CHDS), which was a prospective epidemiological study of more than 1000 adolescents, showed that weekly alcohol use in 15-year-olds was less than 10% but rose to about 30-40% by age 18, with the percentage of adolescents drinking 10 or more standard drinks per typical occasion being less than 5% in 15-year-olds but rising to 20-30% in 18-year-olds. Similar data were found for cannabis use, where about 10% of mid-adolescents and 15% of late adolescents reported using cannabis at least once a week. About 20% of adolescents would have used cannabis 100 times or more by the time they reached adulthood (Horwood and Fergusson, 1998).

As might be expected, higher prevalence rates of substance use among youth in New Zealand are correlated with higher prevalence rates of dependence on various substances.

The Dunedin Multidisciplinary Health and Development Study, another prospective epidemiological study of more than 1000 adolescents, found that 10% had a diagnosis of alcohol

dependence at 18 years and 5% a diagnosis of cannabis dependence (Feehan, McGee, Raja and Williams, 1994). The CHDS similarly found that 24% of young people met the criteria for a diagnosis of alcohol or cannabis dependence by 18 years of age (Horwood and Fergusson, 1998).

1.2.3 Co-existing disorders

These high lifetime prevalence rates of substance use in young people are correlated with relatively high rates of substance use problems – and there is a notable correlation between substance use severity and co-existing problems. These associations were well elucidated by Horwood and Fergusson (1998) using data from the CHDS. These showed that 40% of the study cohort aged 16-18 years met criteria for any psychiatric disorder, comprising 26% with a substance use disorder only, 30% with a substance use disorder and mood, anxiety or conduct disorder, and 44% with a mood, anxiety or conduct disorder in the absence of substance use disorder.

Horwood and Fergusson (1998) demonstrated a clear association between conduct disorder and substance use disorder (both externalising disorders) to the extent that those with conduct disorder were as much as 30 times more likely to have co-morbid substance use disorder than those without conduct disorder.

Furthermore, there were important ethnic patterns. Young Māori females were at a higher risk of being diagnosed with multiple disorders (anxiety or mood disorders and substance use disorders) than non-Māori. However Māori males appeared to be the group with the highest rate of multiple disorders (Horwood and Fergusson, 1998).

These data are consistent with previous studies, which reported young Māori men had higher rates of substance misuse than non-Māori (MOH, 2002). However, less than a quarter (23.5%) of those meeting the criteria for any disorder in Horwood and Fergusson's (1998) study sought treatment. Those who did received treatment almost exclusively through primary health care providers, particularly general practitioners and counsellors. Many participants said they thought they could handle the problem themselves (89%). The study showed little evidence that participants sought help from AOD services. Less than 10% of those with substance use disorders sought any treatment (Horwood and Fergusson, 1998).

1.2.4 Summary

Both experimental and regular substance use increases during adolescence. Alcohol, nicotine and cannabis are the three most commonly used drugs by adolescents in New Zealand, which is the same as for adolescents in other Western countries. Lifetime use by age 19 is in the region of 80% for alcohol, 50% for nicotine and 40% for cannabis. All other drugs, including stimulants, depressants, hallucinogens, opioids, inhalants and others, pale in significance to the 'big three' in terms of lifetime use, indicated by low rates of regular use and dependence. However, an increasing number of adolescents are using hallucinogens and stimulants as part of the contemporary 'dance culture', and extending this into regular 'street' use.

Although using drugs, including alcohol, is common to the point of being normative among New Zealand adolescents, the rate of significant drug misuse leading to clinically significant problems (drug abuse and dependence) is much lower. However, even excluding nicotine, about 20-25% of adolescents will experience problematic substance use by the end of adolescence, although it is unclear how many will continue to have significant chronic relapsing drug dependence into young adulthood; probably less than 5%.

1.3 TREATMENT FOR YOUTH WITH SUBSTANCE USE PROBLEMS

As issues with adolescent substance misuse have increased, so too have treatment initiatives to help combat these issues. However, despite this growth in treatment services, very little research on their efficacy has been conducted in New Zealand.

The international literature focuses more on treatment evaluation, with few randomised controlled studies conducted to address the critical questions of potential differences between treatment programmes and treatment duration (Rosengren, Downey and Donovan, 2000; Maisto, Pollock, Lynch, Martin and Ammerman, 2001; Spooner, Mattick and Noffs, 2001). It is difficult to evaluate the studies that do exist because of differences in treatment samples, treatment settings, methodologies and underlying treatment philosophies, influencing, among other things, treatment outcome measurement (Williams, Chang and Addiction Centre Adolescent Research Group, 2000).

This section presents a brief overview of this literature as a context for examining treatment retention. It follows descriptions of the types of AOD treatment service available for youth in New Zealand and the young people who attend them.

1.3.1 Types of adolescent AOD treatment programme in New Zealand

An official stock-take of child and adolescent mental health services in New Zealand suggested that services to adolescents were provided by all district health boards (DHBs) and a number of DHB-funded non-government organisations (NGOs) (Ramage, Bir, Towns, Vague, Cargo and Niumata-Faleafa, 2005).

The stock-take report did not provide an overview of adolescent AOD treatment services in New Zealand. However, mental health services, including those focusing specifically on AOD issues, can generally be broken down into primary, secondary and tertiary health care services (MOH, 2001).

Primary services are usually provided by general practitioners, community social services or hospital emergency teams, which often intervene opportunistically as clients present with problems other than AOD issues. Primary treatment for AOD issues often involves screening, education and brief therapy.

Secondary and tertiary services have been specifically established to work with people with AOD issues. Secondary services tend to deal with less complicated cases, while tertiary services

handle specialised and more intensive cases. Secondary and tertiary services for young people in New Zealand normally fit into one of three treatment modalities: residential, day or outpatient (New Zealand Health Technology Assessment [NZHTA], 1998). A variety of treatment approaches are used within each treatment modality.

Currently, the main longer-term residential treatment facilities work with the 'Therapeutic Community' (TC) abstinence-based model. Morral, McCaffrey and Ridgeway (2004) described this model as being "a residential treatment emphasizing mutual self-help, behavioral consequences and a shared set of values concerning 'right living'" (Jainchill, 1997 in Morral et al., 2004). The TC views dependence as a symptom of more general behavioural and personality problems and the community itself as the key agent of change" (pp. 257-258). Its purpose is to provide a psychologically and physically safe, nurturing and structured environment in which youth can develop more adaptive personal and social behaviours, attitudes and beliefs (Jainchill, Quinn, Thomas and Mullen, 1992). The intended treatment duration in these programmes ranges from a few weeks to 12 or more months.

There are also a number of Māori-specific residential services that incorporate a 12-step approach within a Māori kaupapa usually incorporating the 'Whare Tapa Wha' model (MOH, 2001). Their intended treatment duration ranges from six to eight weeks to six to nine months.

Day programmes in New Zealand include those based on the TC model used in residential settings. Other types of day/residential programme include adventure/outdoor therapy programmes that incorporate 3-10 day 'wilderness adventures'. This overnighting component is generally accompanied by outpatient counselling visits before and after the wilderness adventure.

Outpatient treatment programmes are the most common youth AOD treatment programmes (NZHTA, 1998) and are run by a variety of organisations using a wide range of models. Most common are treatment facilities funded by DHBs that provide at least one, or all, of counselling, education, information provision and pharmacotherapy. Other outpatient treatment services for youth are run by independent trusts or other NGOs. They include both Māori- and Pacific-specific services.

Despite being referred to as youth services, most youth AOD treatment services in New Zealand have traditionally been based on adult models. In some areas they are run as exclusively youth AOD services, while elsewhere they operate as arms of a youth mental health service or an adult AOD service. Despite recognition that adolescents and adults differ in developmental issues, clinical presentation and history of substance use (Spooner, Mattick and Noffs, 2000; MOH, 2001), few youth services in New Zealand are based on principles that cater to the broader needs of this specific population group.

1.3.2 Descriptions of adolescents attending treatment for AOD use

As there are very few studies evaluating the efficacy of treatment in New Zealand, there is little information on the types of adolescent actually attending AOD treatment.

To date the only national data providing any description of youth attending AOD treatment services in New Zealand comes from the Mental Health Information National Collection (MHINC). MHINC is a national database containing information collected by the Ministry of Health in New Zealand on the provision of mental health and AOD services funded by the New Zealand government. The Mental Health Service Use in New Zealand, 2003 report (New Zealand Health Information Service, 2006), only included a minimal amount of detail on treatment provision for specific areas. In relation to AOD service provision for youth, it found that 3.1% of the contacts made in 2003 by DHBs with child and youth services (NGOs were not included in this analysis) were made in AOD-specific teams. Unfortunately, it did not present a further breakdown of these teams according to age, gender, diagnosis or presenting problems.

The only other descriptions of youth attending AOD treatment in New Zealand come from smaller-scale studies examining various facets of treatment. Their participant descriptions provide some indication of the characteristics of young people attending treatment.

Mossman (2005) evaluated the outcomes for participants engaged in the 'Adventure Development Counselling Programme' (ADC) conducted in Southland, Otago and Canterbury. ADC is an outpatient counselling and adventure-therapy-based treatment programme for youth with a range of behavioural and psychological problems. Participants were described as being 12-18 years old (mean 14.5 years), mostly male (69%), identifying as NZ/European (71%), currently attending school (81%), having been referred by school for treatment (57%) and being regular heavy alcohol users (five-plus standard drinks at least once per week) (82%). Half (50%) of the participants were from single-parent families, 30% had a diagnosis of substance dependence and 41% consumed cannabis at least once a week.

Faisandier, Bunn and Brandam-Adams (1998) reviewed the outcomes of 54 under-18-year-olds who attended a five-week adult residential treatment programme at Queen Mary Hospital in Hanmer Springs from 1994 to 1997. Although this programme was not adolescent specific, the study does give some idea of the types of adolescent who would have attended such specific programmes had they been available at the time.

The adolescents in Faisandier et al's study were described as being 16-17 years old, with 49% living with parents or family, 20% with friends and 27% in no stable environment prior to treatment. Most of these adolescents (90%) were also found to be multiple drug users and 36% of them were found to be using opiates.

The lack of New Zealand data on the characteristics of adolescent clients attending treatment highlights the need for rigorous evaluation studies of New Zealand adolescent AOD treatment programmes.

Rout and colleagues (1998) (cited in McEwan, 1999) conducted a survey of services available for adolescent substance abusers in Christchurch and found those who attended the services were 12-17 years of age (mean 15 years), 60% male and 50% European. They also tended to be low academic achievers, come from broken families and/or have experienced neglect during

childhood, had involvement with the social welfare system and had parents who were heavy substance users..

In the Australian context, Spooner and colleagues (2000) described the patterns and correlates of substance use among adolescents applying for treatment in Australia's multi-modal treatment programme. Typically these clients tended to be "poly-substance users, mostly using cannabis, heroin and/or alcohol... 50% of the sample used heroin daily and the mean number of standard drinks consumed on the last day of drinking was 18" (p. 492). The authors also reported that these adolescents had high levels of psychological dysfunction, criminal involvement and HIV-risk activities.

1.3.3 Summary

Information from these studies suggests that young people present to AOD treatment services with a range of complex issues that are not necessarily confined to their substance use (including mental health issues, family conflict, disengagement from school and criminality).

Further research in this area would be beneficial to allow us to better understand the types of young people who are using AOD treatment services in New Zealand, so that services can plan and respond accordingly.

1.4 EFFICACY OF TREATMENT FOR ADOLESCENTS WITH SUBSTANCE USE PROBLEMS

In general terms, the treatment outcome literature for youth with substance use disorders indicates that exposure to treatment (whether it be within an outpatient, day patient or residential setting) is associated with positive outcomes.

Most research on treatment outcomes has been conducted in the USA, with a focus on residential and day programmes. The results suggest that programmes providing a broad multiple therapy approach tend to be more successful than those offering narrow or single treatment options (Weinberg, Radhert, Colliver and Glantz, 1998; Williams et al., 2000). These ancillary services include social service involvement and psychotherapeutic services, including anger management, life and social skills training and job skills training.

Insufficient research has been conducted both nationally and internationally to enable the efficacy of different treatment modalities to be compared (NZHTA, 1998). For this reason, not a great deal can be directly said about the efficacy of residential AOD treatment for adolescents compared with other adolescent AOD treatment modalities, such as outpatient or day patient treatment. Similarly, there have been few comparisons of different types of residential, day or outpatient setting.

The limited studies of the efficacy of one treatment modality over another are mostly quasi-experimental, occasionally employing matched control groups (either waitlisted participants or participants receiving an alternative treatment within the same or another treatment modality). The

earliest of these studies (Sells and Simpson, 1979; Hubbard, Cavanaugh, Craddock and Rachal, 1985) have been reviewed extensively by Catalano and colleagues (1990-1991) and Williams and colleagues (2000).

Sells and Simpson (1979) compared adolescents who had received treatment in a variety of treatment modalities, including methadone maintenance, TCs, outpatient drug free (ODF) and detoxification. These programmes were adult treatment programmes attended by adolescents. Their results showed no evidence of any differences in outcome between the treatment modalities, but did find that adolescents in all treatment programmes had improved outcomes relating to substance use (other than alcohol and cannabis) at four- and six-year follow-up.

Hubbard and colleagues' 1985 study compared adolescents in residential treatment with those in ODF treatment. It found that while in general adolescents in residential treatment showed substantially better outcomes, adolescents in ODF also showed some positive improvements in that they were able to reduce aspects of their substance use and had some improvement in their psychological functioning.

The main difficulty in drawing sound conclusions from these findings was the lack of non-treatment control groups and matched or randomised assignments to treatment groups. Both studies failed to differentiate between the effects of treatment, client characteristics and natural recovery.

More recently, however, other attempts at quasi-experimental studies have further examined the efficacy of different treatment approaches. One such study, conducted by Winters, Stinchfield, Opland, Weller and Latimer (2000), examined the efficacy of the Minnesota model of adolescent AOD treatment. This model, primarily a 12-step [Alcoholics Anonymous](#) (AA) approach combined with the basic principles of psychotherapy, is delivered within residential or outpatient settings and is thought to be one of the USA's most widely used substance abuse treatment models for adolescents.

The study participants were 179 adolescents for whom full intake and post-treatment data were collected. These participants were attending either a residential (n=101) or outpatient (n=78) Minnesota model treatment programme or had completed an intake interview and were placed on a waitlist to enter treatment (n=66). Most were on a waitlist due to problems with financing issues with health insurance companies.

Although not randomly assigned to groups, the three groups were found to be comparable on measures of substance use severity, gender and background demographics. The study results indicated that those who completed treatment (78%), regardless of treatment modality (outpatient or residential), were significantly more likely to have reduced their level of substance use to either abstinence or minor lapse (aggregate frequency of use limited to once or twice) compared with the waitlisted and non-completer groups.

An analysis of the group of treatment non-completers revealed that 79% had left by the first week of treatment in residential treatment or the fifth session in outpatient treatment. In addition, none of

the treatment drop-outs completed more than 50% of the treatment, indicating that this group had only received minimal treatment before they left the programme. Although unable to differentiate between treatment modalities, these results provide evidence to confirm further that some treatment is better than no treatment at all.

Spooner and colleagues (2001) provided one of the few controlled adolescent treatment outcome studies conducted outside the USA. This study compared substance use, personal and social functioning and health outcomes for 55 adolescents attending a multi-modal three-month residential treatment programme (designed especially for adolescents with substance use problems) with the same outcomes for 55 adolescents who were eligible to participate in the programme but were given 'usual care.'

The term 'usual care' in this study was allocated to those participants who were placed on a waitlist but did not enter the residential programme, usually because of a change of circumstance (e.g. sentenced to detention) or because of a change of mind about entering treatment. Equivalence between the two groups was not discussed other than to mention that all participants were aged 14-18 years and met DSM-IV criteria for a substance abuse or dependence disorder. Those in the comparison group were more difficult to retain to six-month follow-up, and drop-outs were more likely to be from the comparison group and use heroin in general and on a daily basis than those who were followed up to six months.

Unfortunately, the lack of information on the equivalence of these two groups precludes any definitive conclusions about the factors affecting drop-out. This same limitation also applies to the overall findings of the study, which failed to show any differences in outcomes between the intervention and comparison groups. It is uncertain whether these results can be explained by natural recovery, treatment differences or differences in client characteristics at baseline.

However, despite being unable to explain why these outcomes were achieved, this study did show improvement for all participants, with reductions in substance use, criminal behaviour, social dysfunction, psychological distress, HIV-risk behaviour and physical health symptoms that were maintained at six-month follow-up. While this does not support any one particular treatment approach, it does support Catalano and colleagues' (1990-1991) conclusion that some treatment is better than no treatment at all, as most of the comparison group were reported to have attended some form of treatment over the study period.

Recent information from the Drug Abuse Treatment Outcome Studies for Adolescents (DATOS-A) has further highlighted the important role of treatment in reducing adolescent substance use and associated problems. The study was designed specifically to evaluate outcomes for adolescents in a range of AOD treatment programmes in four USA cities. Although not experimental in design, it provided useful information using pre- and post-test data by examining a variety of different treatment modalities and the outcomes achieved by the adolescents participating in them.

Hser, Grella, Hubbard, Hsieh, Fletcher, Brown and Anglin (2001) reported on the outcomes related to substance use, psychological adjustment, criminal involvement and school performance for 418

adolescents in eight residential AOD treatment settings (of varying durations) and 292 adolescents in nine ODF treatment settings. Although they did not directly compare the two treatment modalities, the authors found that adolescents in residential treatment had the same levels of substance use and type as those in ODF, but were more likely to be males with more criminal involvement. Legal agencies, rather than family/friends, were the primary referral source for adolescents in ODF. Despite the adolescents in residential treatment being characterised as more difficult clients and more difficult to treat, it was reported that these clients did about as well in treatment as those adolescents in ODF.

Although Hser and colleagues (2001) found that treatment outcomes were similar across treatment modalities, Galaif, Hser, Grella and Joshi (2001), using data from the same sample of adolescents, found that the client factors that predicted outcomes, such as retention in treatment and substance use during the first year after treatment, were different across treatment modalities.

Using 'structural equation modelling' and 'path analysis', Galaif and colleagues (2001) concluded that severity of substance use when entering treatment was the client characteristic that predicted less treatment retention of adolescents in ODF. For adolescents in residential settings, those with families with greater substance use and those with greater criminal involvement at admission were less likely to stay in treatment. However, in terms of substance use outcomes, the main predictor for adolescents reducing substance use in ODF was less family substance use, while for adolescents in residential settings it was not having a diagnosis of conduct disorder.

Although these studies do not delineate the treatment or client characteristics that contribute to the outcomes, they do suggest the value of having a range of treatment modalities available to meet the diverse needs of young people entering AOD treatment. Further work to identify what aspects of treatment work for which clients is still urgently needed in the adolescent AOD treatment area.

The most recent study evaluating the effectiveness of an adolescent AOD treatment programme focused on a residential TC programme known as the Phoenix Academy (Morrall et al., 2004). The study compared the Academy's efficacy with a non-treatment group of adolescents described as having "behavioral profiles" (p. 259) similar to those adolescents sent to the Academy. The treatment outcomes of 175 adolescents admitted to the Los Angeles Academy were compared with those of 274 adolescents admitted to "other" adolescent residential facilities (the comparison group) that did not have a specific focus on AOD treatment, although AOD treatment may have been part of their programmes. As all adolescents in this study were probationers, some form of alternative facility was sought when there was no room for placement at the Academy.

Although initially the two groups were found to be non-comparable on a number of background and substance use measures, a case mix statistical adjustment eliminated all differences except for gender, last grade completed in school and injection drug recency. These three variables were included as covariates in the outcome analyses.

The results from this study showed that the adolescents attending the Academy did significantly better on a range of substance use, psychological and mental health measures than those in the

comparison group at 12-month follow-up. Again, the results of this study must be read with caution given the lack of randomised assignment or the use of a matched controlled group. Additionally, the fact that many of the adolescents in the comparison group did receive some form of active treatment limited the authors' ability to identify the aspects of the treatment programmes that worked or did not work.

However, this study made it apparent that for adolescents who were similar on many pre-treatment characteristics (after being statistically controlled), treatment outcomes at 12-month follow-up were better for those who attended the Academy than for those in alternative programmes. Future research is greatly needed to examine the aspects of the treatment process that may be contributing to these effects.

Based on these studies, it can be concluded that AOD treatment services have a significant impact on improving the health and wellbeing of adolescents with substance use problems. These improvements are seen across a variety of domains and are also shown to have a reasonable duration, with most studies showing sustained improvements at 12 months follow-up. However, despite the apparent success of these programmes, research to date has not clearly identified the aspects of treatment that work best for what kinds of adolescent. This type of treatment evaluation research is urgently required.

1.4.1 Factors associated with treatment outcomes

Although there have been no rigorously controlled evaluation studies, a number of researchers have examined factors associated with treatment outcomes by conducting a range of pre- and post-test studies.

The main treatment outcomes studied have been:

- Treatment retention measured as length of time in treatment and/or treatment completion (for example, Blood and Cornwall, 1994; Friedman, Glickman and Morrissey, 1986; Friedman and Glickman, 1987; Galaif et al., 2001; Kempf and Stanley, 1996; Melnick, De Leon, Hawke, Jainchill and Kressel, 1997; Mossman, 2005; Orlando, Chan and Morral, 2003; Pompei and Resnick, 1987).
- Post-treatment substance use measured as a dichotomous abstinence vs no abstinence variable, reduction in substance use (incorporating a raft of definitions of levels of substance use) and/or as type of substances used (for example, Brown, D'Amico, McCarthy and Tapert, 2001; Faisandier et al., 1998; Galaif et al., 2001; Hser et al., 2001; Hsieh, Hoffman and Hollister, 1998; Knapp, Templer, Cannon and Dobson, 1991; Latimer, Newcomb, Winters and Stinchfield, 2000; Maisto et al., 2001; Mossman, 2005; Shane, Jasiukaitis and Green, 2003; Spear, Ciesla and Skala, 1999).
- Psychological and social functioning, including measures of current mental health, living circumstances and social participation (for example, Faisandier et al., 1998; Hser et al., 2001; Mossman, 2005; Ralph and McMenamy, 1996; Rush, 1979; Spear et al., 1999).
- Educational and/or employment status measured as currently engaged in education/training and being employed (for example, Faisandier et al., 1998; Hser et al., 2001; Knapp et al., 1991; Rush, 1979).

- Criminal involvement measured as number of convictions, type of criminal activity and number of arrests (for example, Faisandier et al., 1998; Galaif et al., 2001; Hser et al., 2001; Mossman, 2005; Ralph and McMenamy, 1996).

Each of these outcomes (and others not listed) has been examined in relation to a number of variables to ascertain its ability to predict treatment outcome. In general, these variables have been divided into three main types, covering:

- Pre-treatment client characteristics such as age, gender, substance use severity, type of substance use, family history of substance use/misuse, educational status, criminal involvement etc.
- During-treatment characteristics such as length of time in treatment, treatment completion, staff experience, staff philosophy and feelings of comfort in treatment.
- Post-treatment characteristics such as living environment, social support and participation in aftercare programmes.

These factors have been extensively reviewed by Catalano et al., 1990-1991, Spooner, Mattick and Howard, 1996 and Williams et al., 2000. These reviews conclude that most of the work in this area has produced inconclusive findings because of unsystematic research and methodological limitations such as a lack of randomised controlled trials and inconsistent variable definitions and measurements.

The best that can be surmised is that while there are some pre-treatment client characteristics, such as substance use severity, criminal involvement and family substance use history, that commonly appear to be related to treatment outcomes, the mechanisms by which they work and interact in a particular treatment context are still unknown. As Latimer and colleagues (2000) succinctly write: "... treatment outcomes are influenced by a constellation of risk and protective factors rather than by the presence or absence of one specific factor" (p. 686). Further research is essential to explore more fully these variables and those less commonly studied during treatment and post-treatment.

1.4.2 Treatment retention

Treatment retention is a special case in the treatment outcome literature. It is measured as an important treatment outcome and has also been found to be the most consistent predictor of treatment outcomes for adolescents receiving treatment in residential settings (Catalano et al., 1990-1991).

A number of studies have demonstrated a relationship between the length of time in residential treatment and positive outcomes (Hu, Hunkeler, Weisner, Li, Grayson, Westphal et al., 1997; Muck, Zempolich, Titus, Fishman, Godley and Schwebel, 2001). More specifically, those who stay at least three months have been found to have better treatment outcomes than those who stay for less time, although these data are not the findings of controlled clinical trials and may reflect pre-existent patient characteristics (Brady, 2002; Epstein, 2004).

Despite these limitations, it has been concluded that spending time in residential treatment provides a stabilising influence for adolescents' substance misuse, which in turn allows for other aspects of treatment to be addressed (Gossop, Marsden, Stewart and Rolfe, 1999). Such conclusive associations between treatment retention and treatment outcome have not been found in non-residential treatment modalities for youth, but among adult populations there is a strong link between retention and outcomes in day and outpatient modalities (Stark, 1992). The lack of conclusive findings among adolescent studies is most likely due to methodological issues, including insufficient research in this area.

Despite growing acknowledgement of the importance of retaining clients in treatment, attrition rates are high among youth and adults in substance abuse treatment (Stark, 1992; Williams et al., 2000). Stark (1992) states that many adult studies report a 50% drop-out rate within the first month of treatment and a 26-80% drop-out rate within the first three months of treatment across a range of treatment modalities for a variety of substance use disorders.

However, Stark also concedes that the drop-out rate is difficult to estimate accurately as definitions of treatment retention vary across studies. This is particularly evident in studies examining youth treatment retention, which are not only few in number and have disparate definitions of retention, but also often fail to report the actual length of treatment or proportion of treatment completers. In the few studies that do, estimates range from 40% to 77% attrition within the first three months of treatment across a range of treatment modalities (Galaif et al., 2001; Hser et al., 2001; Orlando et al., 2003; Pompei and Resnick, 1987).

The increased understanding of the importance of treatment retention in improving treatment outcomes and the high attrition rates among adolescent treatment populations highlights an urgent need to better understand factors associated with young people staying in or leaving treatment. The few studies to date have primarily examined treatment retention as an outcome variable and consequently reflect many of the issues already identified as limiting treatment efficacy studies. These problems are magnified, however, by the limited number of studies conducted and inconsistent definitions of retention.

Treatment retention has been measured either as time spent in treatment (normally calculated as discharge date minus admission date) or treatment completion – which is generally defined as the completion of treatment goals or, less commonly, the spending of a set period of time in treatment. Both treatment retention definitions have been applied across a range of treatment settings, making comparisons across an already small number of studies problematic.

In addition, a range of variables has been examined in relation to treatment retention. These can broadly be described as fixed client characteristics, dynamic client characteristics and programme-related variables.

1.4.2.1 *Fixed client characteristics*

De Leon, Melnick and Kressel (1997) described unchangeable characteristics such as demographic and background variables as “fixed” (p. 169) client characteristics.

The main fixed client characteristics that have been examined in relation to adolescent treatment retention are age, race, gender, socio-economic status (SES), severity of substance use, length of substance use, mental health status, parental substance use/abuse and educational and employment history.

1.4.2.1.1 *Age*

As with adult studies, research examining age as a factor in adolescent treatment retention has produced inconclusive evidence. Friedman and colleagues (1986) examined age as a client characteristic that could influence treatment retention as part of a larger retrospective study evaluating treatment outcomes in 30 outpatient and 22 residential drug treatment programmes in the USA (Friedman and Glickman, 1987). Although not statistically significant, younger adolescents were comparatively more likely to complete outpatient drug treatment than older adolescents ($r=-.14$). Blood and Cornwall (1994), in their study examining pre-treatment variables that predict treatment completion, similarly found little distinction between treatment completers and non-completers based on age. More recently, Orlando and colleagues (2003) and Mossman (2005) found no relationship between age and treatment retention in their outcome studies on adolescent AOD treatment.

In contrast to the above studies where age was compared within an adolescent sample, Pompei and Resnick (1987) compared adult and adolescent clients attending residential AOD treatment. Interested in examining the impacts of court referral on treatment retention, the authors compared adults and adolescents within the same therapeutic community (TC) (Abraxas) with participants (primarily non-court-referred adults) in six other TC's in Pennsylvania, USA. Comparisons between adults and adolescents in the Abraxas community found that after 10 months significantly more adults (57%) were retained in treatment than adolescents (36 %). Interestingly, the authors found that the effects of age on retention were mediated, but not ameliorated, by the source of treatment referral (i.e. court referred vs non-court referred). These findings are discussed in greater detail in the section examining motivation for treatment.

Melnick and colleagues (1997), who also compared adults' and adolescents' internal motivation to engage in treatment and treatment retention, found that while age was positively correlated with motivation for treatment and higher motivation was predictive of longer treatment retention, there was no direct correlation between age and treatment retention at either 45-day or one-year follow-up. Melnick and colleagues (1997) concluded that, at best, age could be viewed as indirectly influencing treatment retention through its effects on motivation to engage in treatment. The authors also highlighted the importance of examining dynamic client characteristics (reviewed later in this report) as well as fixed characteristics in better understanding client factors associated with treatment retention.

1.4.2.1.2 *Gender*

Inconclusive results from studies examining the association between gender and treatment retention among adult populations led Stark (1992) to conclude that gender had an indirect rather than a direct effect on treatment retention.

More recent studies support this conclusion, as debate continues on the impact of gender on clients' decisions to complete AOD treatment. While some studies continue to find that males are more likely to complete treatment than females (Arfken, Klein, di Menza and Schuster, 2001; Baekelund and Lundwell, 1975; McCaul, Svikis and Moore, 2001), others have found no gender differences between adult males and females (Green, Polen, Dickinson, Lynch and Bennett, 2002; Veach, Remley, Kippers and Sorg, 2000).

These differences highlight the complex nature of gender and the way in which it potentially impacts on treatment retention. It is important to consider the mediating influences of treatment type and modality, severity of drug use, employment status, marital status and mental health diagnoses (Green et al., 2002). Green and colleagues also stressed the importance of examining the effect of gender on various components of the treatment process (treatment initiation, completion and time spent in treatment) to better understand the impact of gender differences on AOD treatment.

Interestingly, Green and colleagues (2002) found that although men and women did not differ in initiation, completion and time spent in treatment, they differed on the factors that predicted these outcomes. For example, treatment completion in women was related to level of income (higher) and referral method (legal/agency), while for men treatment completion was predicted by older age. Conversely, failure to complete treatment was predicted in men by worse psychiatric symptoms and receiving Medicaid, while failure for women to complete treatment was predicted by more substance dependence diagnoses and greater substance use severity.

There is limited research directly examining the effects of gender on adolescent retention in AOD treatment. Blood and Cornwall's (1994) study examined a range of pre-treatment variables that predicted completion in an adolescent substance abuse treatment programme. In this study factors predicting treatment retention were identified for males but not females. In light of Green and colleagues' (2002) findings, it is possible that this is a genuine gender difference. However, given the limited number of females (39) compared with males (93) participating in this study, these results should not be over-interpreted.

In their study of the adults and adolescents in the Abraxas drug treatment programme, Pompei and Resnick (1987) found that males were significantly more likely to stay in treatment (44.5%) than females (57.0%). Unfortunately, these data were not analysed to control for the variable of age, so it is not possible to discern whether this was a true gender effect or the result of an age-gender interaction. Given that this study examined data from adult and adolescent populations, this analysis seems important in drawing conclusions about the role of gender in treatment retention.

Two more recent studies examining outcomes associated with adolescent AOD treatment reported no gender differences in the length of time spent in treatment (Mossman, 2005; Orlando et al., 2003).

One of the main difficulties in determining the role of gender in treatment retention is that many studies do not include female participants – and in those where females are included the number of females is limited. This is largely a reflection of the greater proportion of males traditionally presenting to adolescent AOD treatment services. However, as times change and more females present, this sampling issue is likely to be reduced.

1.4.2.1.3 Ethnicity

The impact of race/ethnicity is another variable that has received minimal attention, yet it is one of the few in treatment retention where conclusive findings have emerged.

Pompi and Resnick (1987) found no ethnic differences in the Abraxas sample between ‘whites’ and ‘non-whites’ who remained in treatment at 10 months. However, results should be considered in terms of high numbers of ‘whites’ (1299) and low numbers of ‘non-whites’ (173). Melnick and colleagues (1997) also found no differences between the number of white, African-American and Latino adults and adolescents who remained in treatment across three treatment programmes after 45 days of treatment. Similarly, Mossman (2005) reported no ethnic differences between a sample of New Zealand adolescents who had and had not completed an adventure therapy AOD treatment programme.

1.4.2.1.4 Educational status

Friedman and colleagues (1986) found that in addition to younger clients being more likely than older clients to remain in treatment, they were more likely to be enrolled in educational or skill development programmes. Multiple regression also showed that enrolment in an educational or skill development programme predicted treatment retention.

Blood and Cornwall (1994) found that male and female subjects who completed or failed to complete an intensive day or residential substance abuse programme for adolescents in Nova Scotia, did not have significantly different histories of school achievement, although a substantial number of adolescents in both groups (74%) repeated one or more grades at school. Similarly, Mossman (2005) did not find any significant differences in school attendance between youth who had completed and youth who had dropped out of AOD treatment.

It is important to note that each of these studies examined different aspects of educational status, a finding that is typical of research in this field. Given the limited number of studies and the single-study examination of these factors, it is difficult to draw any conclusions about the role of education or employment status in adolescent treatment retention.

1.4.2.1.5 *Criminal history/behaviour*

A number of studies have examined aspects of criminal history and behaviour. While some have focused on the presence or absence of criminal history (Blood and Cornwall, 1994; Mossman, 2005), others have focused more on the level and type of criminal activity (e.g. Friedman et al., 1986; Galaif et al., 2001). Friedman and colleagues (1986), for example, examined the number of arrests a client had within the 24 months prior to admission and found that clients who were arrested less often prior to treatment tended to be more likely to complete treatment (although this result represented only a trend towards significance ($p=.08$)).

Galaif and colleagues (2001), who extensively examined treatment outcomes in a variety of residential and ODF programmes in the DATOS-A project, found the influence of criminal involvement was different across each treatment type. Their study analysed criminal activity in more detail by examining each client's number of types of illegal act committed and number of arrests. 'Structural equation modelling' revealed that criminal involvement predicted less treatment retention for adolescents in residential treatment, but was not significantly related to treatment retention for adolescents in ODF treatment.

Blood and Cornwall (1994) and Mossman (2005) similarly found no relationship between criminal history and treatment retention in their populations of residential, intensive day patient and adventure therapy participants.

1.4.2.1.6 *Referral source*

Adolescents can be referred to treatment from a range of sources. By far the most common are education, health, family and social welfare (referred to in this study as 'other referred'). The other two common referral sources are 'self-referral' and referral from the justice system, referred to in this study as 'court referred'.

The issue of referral source is important in treatment retention, as it is seen as an indicator of motivation for treatment. It is assumed that those who self-refer to treatment are more intrinsically motivated to attend and are therefore more likely to remain in treatment longer. However, given that those mandated to attend treatment may be avoiding other, more aversive outcomes (such as a criminal conviction, a jail sentence or being thrown out of school or the family home), there are also grounds for assuming this group is highly motivated to attend treatment, albeit being externally motivated. The interest in referral sources is not so much about the actual source but the level of motivation for treatment that is implied by the source.

Two main studies have looked specifically at the effects of court referral on treatment retention (Melnick et al., 1997; Pompei & Resnick, 1987). Pompei & Resnick, (1987) compared court referred adults and adolescents with non-court-referred adults and adolescents and found that court referral was a strong predictor of treatment retention, particularly for adolescents in the initial stages of treatment. This finding was strengthened after comparing Abraxas with other treatment programmes with predominantly adult clients. These findings showed greater retention for court-referred adolescents in the Abraxas programme than for non-court-referred adults in other

programmes. However, these results should be read with caution as there was no control for treatment characteristics, so differences may have been related to differences in treatment rather than client referral.

Melnick and colleagues (1997) also compared adult and adolescent samples in two treatment programmes and found that legal referral correlated positively with treatment retention for both adolescents and adults. These findings are interesting, because in a field where little conclusive evidence is found, they tend to suggest that court referral has a positive influence on treatment retention.

More interesting, however, is the lack of evidence suggesting that court referral relates to better treatment outcomes. Such findings highlight the complexity of assuming linear relationships between treatment retention and treatment outcomes. They remind us that while attending treatment for a suitable length of time may be seen as a necessary condition for improved treatment outcomes, it cannot be seen as a sufficient condition. Engagement over this attendance period may be a crucial yet neglected element. Future research is urgently needed to delineate treatment attendance, treatment engagement and treatment outcomes.

1.4.2.1.7 *Substance use*

A variety of aspects of substance use have been examined in relation to treatment retention, including substance use severity, history of substance use and primary drug of choice (PDC). Friedman and colleagues (1986) examined both PDC and frequency of substance use and found that neither measure was associated with treatment retention, although having cannabis as a PDC was negatively associated with drug use reduction.

Blood and Cornwall (1994) similarly used multiple substance use measures, including a current AOD use history, a measure of severity of alcohol involvement using the Adolescent Alcohol Involvement Scale and a measurement of other drug involvement using the Drug Abuse Screening Test – 10. Significant results were only found for male participants, with discriminant function analyses indicating that higher levels of involvement with alcohol (more problematic use) and higher scores on the recency of use of drugs other than alcohol, cannabis and tobacco, and lower scores on the current combined alcohol, cannabis and tobacco scale were predictive of treatment completion. These results demonstrate the intricate nature of factors related to treatment retention and highlight the need for precise measures of different aspects of substance use and its associated problems.

Melnick and colleagues (1997) restricted their measure of substance use to PDC and found, in their sample of adolescents and adults from two different treatment centres, that adolescents were more likely to report cannabis and cocaine as their PDC, while adults were more likely to report cocaine, crack and opiates as their PDC. Despite these differences, PDC was found to be only minimally predictive of treatment retention for adolescents in the adolescent-only programme (but not for adolescents or adults in the second treatment programme). The authors concluded that relative to the predictive value of internal motivation for treatment (reported in more detail in the

next section), the effects of PDC on treatment retention were small and may have resulted from distribution effects across samples.

Galaif and colleagues (2001) measured the severity of alcohol and cannabis misuse based on a number of dependence symptoms and frequency of alcohol and cannabis use in adolescents in ODF or residential AOD treatment. They found different pathways to treatment completion for each treatment type.

For adolescents in ODF, more severe alcohol and cannabis use predicted less treatment retention, while no relationship was found between treatment retention and the severity of alcohol or cannabis use for adolescents in residential treatment. Results from this study support the idea that different treatment modes are suited to different levels of problem severity, with residential programmes generally recognised as suited to those with more complex problems. It is possible that participants in Galaif and colleagues' study who experienced more severe substance misuse issues would have been better placed in residential rather than ODF treatment programmes.

To contradict this view, Orlando and colleagues (2003) measured substance use severity using a 16-item problem index from the Global Appraisal of Individual Needs. A measure of substance use severity was determined based on the DSM-IV criteria for substance abuse and dependence. Using survival analysis, the results of this study indicated that adolescents with higher substance abuse severity were less likely to remain in AOD residential treatment than those with less severe use.

The disparate views presented in these studies reiterate the complexity of teasing out factors associated with treatment retention. Indications are that, at the very least, when contemplating the role of substance use in treatment retention, the aspect of substance use measured and the mode of treatment being examined should be considered.

1.4.2.1.8 Psychopathology/psychological wellbeing

With reports of consistently high co-morbidity between substance use disorders and other mental health disorders, the impact of a co-morbid mental health diagnosis must be considered in relation to treatment retention.

Horwood and Fergusson (1998) found that, among population samples in New Zealand, 40% of adolescents met the criteria for any psychiatric disorder; comprising 26% with a substance use disorder only, 30% with a substance use disorder and mood, anxiety or conduct disorder and 44% with a mood, anxiety or conduct disorder in the absence of substance use disorder. Similar results were reported by Feehan and colleagues (1994), where among 18-year-olds in the general population who were diagnosed with alcohol or cannabis dependence, 45% had a co-morbid mood disorder, 40% a co-morbid anxiety disorder and 31% a co-morbid conduct disorder.

A number of measures have been used to examine the impact of psychopathology on treatment retention. While some have directly assessed the presence or absence of mental health disorders,

others have measured aspects of psychological wellbeing. For example, Blood and Cornwall (1994) measured both psychopathology and psychological wellbeing. The Youth Self Report, designed to measure adolescent's perceptions of their behavioural and emotional functioning, was used to measure the extent of internalising and/or externalising behavioural problems, while the Coopersmith Self-Esteem inventory was used to measure one aspect of psychological wellbeing. Results from this study showed that for males, but not females, indications of higher internalising behaviours predicted treatment retention.

Galaif and colleagues (2001) measured psychological maladjustment using the hostility and self-esteem scales of the Symptom Checklist – 90. They also assessed the presence or absence of conduct disorder based on DSM-III-R criteria. Structural equation modelling showed that for adolescents in ODF and residential treatment, neither measure of psychological maladjustment or psychopathology was predictive of treatment retention. Similarly, Orlando and colleagues (2003) and Mossman (2005) found no relationship between measures of co-morbid mental health diagnosis and treatment retention.

On the other hand, Wise, Cuffe and Fischer (2001) found, in their sample of youth attending a residential substance abuse treatment programme, that conduct disorder and attention deficit hyperactivity disorder (ADHD) were both associated with less successful 'participation' in treatment. 'Participation' was determined by the treatment team at discharge and included a consideration of attendance, positive interactions and contributions made during the programme. In this sense it could be argued that treatment retention was more comprehensively measured, in that it also reflected some important elements of treatment engagement. Such differences highlight the difficulties in making comparisons across studies and reiterate the necessity to conduct further research on both retaining and engaging youth in AOD treatment.

Siegal, Rapp, Fisher, Cole and Wagner (1993) and Horwood and Fergusson (1998) also found co-morbid conduct disorder to be an indicator of treatment non-completion. Their study results support findings from the adult literature indicating that externalising disorders are linked to greater treatment drop-out (Stark, 1992). In contrast, adult studies have shown that internalising disorders such as depression and anxiety are associated with greater treatment retention (Stark, 1992). Such conclusions cannot be drawn from adolescent studies.

1.4.2.1.9 Family relations/family substance use history

Family relations and family substance use history are important client characteristics whose relationships with treatment retention have been the subject of debate. Despite their potentially being important elements of treatment efficacy and retention, there has been surprisingly little research on this issue. Those studies undertaken have produced inconclusive and conflicting results.

For example, a few studies have failed to find any association between treatment retention and family relationship problems (Blood and Cornwall, 1994) or family drug or heavy alcohol use (Mossman, 2005; Orlando et al., 2003). However, Galaif and colleagues (2001) found that family

drug and alcohol involvement predicted less treatment retention for youth in residential treatment but not for those in ODF treatment.

1.4.2.1.10 Peer relations/peer substance use history

Given that peers are commonly acknowledged as playing an important part in the lives of adolescents, a few studies have examined the role of peer relations and perceived peer substance use on treatment retention.

Blood and Cornwall (1994) and Orlando and colleagues (2003) found that adolescents involved in risky peer environments (defined as having higher levels of problems with peers or having peers who were involved in heavy drug and alcohol use) were more likely to drop out of treatment than those who did not have risky peer relations. Galaif and colleagues (2001), using perceptions of friends' AOD involvement as a measure of peer substance use, did not find any relationship between this variable and treatment retention in either the ODF or residential treatment setting.

1.4.2.1.11 Previous treatment history

Surprisingly only one study (Mossman, 2005) was found that measured the potential impacts of previous treatment history on treatment retention. This study supported the general conclusions of adult studies, suggesting that those who had been in treatment previously were less likely to complete the current treatment episode than those who were attending for the first time (Stark, 1992).

1.4.2.2 Summary

Although a range of fixed client characteristics has been examined in relation to retaining youth in AOD treatment settings, few conclusive findings have emerged. Many researchers agree that such inconclusive findings indicate that fixed client characteristics are not sufficient to explain treatment retention fully.

Other important variables that have been considered are what De Leon and colleagues (1997) refer to as “dynamic client characteristics”.

1.4.2.3 Dynamic client characteristics

According to De Leon and colleagues (1997), dynamic client characteristics are those “which describe the changing or ‘dynamic’ characteristics of the individual (e.g. client perception variables such as motivation and readiness)” (p. 169).

The authors conclude from the adult literature that ‘dynamic’ client characteristics are more relevant to understanding factors associated with treatment efficacy and retention than fixed client characteristics. Given the sparse research on dynamic client characteristics, such conclusions

about adolescent treatment retention are difficult. This section reviews the available literature in this area.

1.4.2.3.1 *Motivation and readiness for engaging in treatment*

As mentioned previously, youth who are externally motivated to attend AOD treatment through court referral are likely to stay longer in residential treatment than those who are not.

The process underlying this relationship has not been investigated, although it has been speculated that it relates to the potentially negative consequences for these participants as a result of not attending treatment (i.e. incarceration, fines etc.). What is not clear from these findings is the impact of external motivation, through legal, family or school pressure, on clients' actual participation in treatment, rather than just their attendance at treatment. Such differentiation is seldom made in the research literature, although it is an important concept to consider when promoting treatment outcomes, especially when research shows that being mandated to attend treatment is not commonly associated with better treatment outcomes.

To better understand the role of motivation in treatment retention and extend the measure of motivation beyond reliance on a highly problematic measure such as 'source of referral', Melnick and colleagues (1997) examined the significance of motivational and readiness factors to treatment retention across a group of adult and adolescent clients in two residential TCs in North America. Using the Circumstances Motivation Readiness Suitability (CMRS) scale, the authors measured clients' perceptions of the circumstances and their motivation, readiness and suitability for treatment. Results from this study indicated that not only did internal motivation for treatment increase with age, but higher CMRS scores were consistently related to 45-day treatment retention. Specifically, adolescents with higher CMRS scores were found to be twice as likely to remain in treatment at 45 days than those with lower CMRS scores.

The only other study to examine dynamic client characteristics was Orlando and colleagues' (2003) study examining the impact of legal pressure on treatment retention. Along with fixed client characteristics and programme-related variables, this study focused on ascertaining clients' views on whether they needed help with their substance use (motivation), whether they could avoid substance use in specific contexts (resistance self-efficacy) and whether they understood the relationship between their substance use and current problems for which they were referred to treatment (problem orientation).

The study's results showed that although resistance self-efficacy and problem orientation were not related to treatment retention, motivation for treatment was. In short, even among youth mandated to treatment there were differences in internal motivation to attend and engage in treatment. In order to better understand the link between motivation and treatment retention, it is necessary to extend measures of motivation to include qualitative measures that examine both internal and external motivation.

1.4.2.4 *Treatment characteristics*

This final category of treatment-retention variables examines the characteristics of the treatment programme rather than those of the client. This is particularly necessary for understanding adolescent treatment retention, given developmental differences between adults and adolescents and the fact that most adolescent AOD treatment programmes are not designed specifically for adolescents but are based on adult models.

Studies examining staffing factors have shown that the higher the degree of staff experience and the higher the staff-to-client ratio, the more positive the impact on treatment outcomes (Fergusson, Horwood and Lynskey, 1994; Ralph and McMenemy, 1996). It has been shown that experienced staff are able to develop more effective therapeutic relationships and are more equipped to help young people in effecting changes to their lives through developing life skills and improved coping (Ralph and McMenemy, 1996; Maisto et al., 2001). Positive staff attitudes have also been associated with better treatment outcomes for clients (Williams et al., 2000), and similar findings have been reported in relation to staffing issues and treatment retention.

Friedman and Glickman (1987) examined the treatment characteristics of 22 residential treatment programmes. Programme participants, counsellors and treatment managers described their views of the programmes' attributes and environmental characteristics by completing the Community Oriented Environment Scale. In addition, programme managers completed Administrator Information Forms to provide a picture of the programmes' overall philosophies and processes. Counsellors/therapists also completed Counsellor/Therapist Information Forms with information about clients and the programmes (e.g. length, type and number of sessions and most types of client problem) to reveal their philosophies of treatment and experiences of clients' motivations for treatment.

Results from this study revealed a number of programme-related variables for treatment retention, including:

- The number of years the counsellors/therapists were employed in the programmes.
- The number of volunteer staff in direct service.
- The proportion of clients receiving training in relaxation techniques.
- Counsellors' perceptions that programmes encouraged spontaneous personal expression and less client autonomy.
- Counsellors' beliefs that providing practical assistance in solving real-life problems was a useful aspect of treatment.

Kempf and Stanley (1996) took a different approach to examining programme-related variables in relation to adolescent treatment retention when they examined the effects of a tobacco-free policy on treatment retention. Comparing adolescents in one treatment programme that had recently adopted a tobacco-free policy with adolescents in a programme that did not have a tobacco-free policy, Kempf and Stanley (1996) found that the tobacco-free status of the treatment programme did not have any impact on treatment retention.

Orlando and colleagues (2003) examined the impacts of clients' perceptions of programme services on treatment retention. Results indicated that those participants who had identified that they needed a number of services additional to help with their AOD problems, and who received those services, were more likely to remain in treatment than those who did not. The authors also found that participants' perceptions of treatment programmes as safe environments contributed to treatment retention.

This is not surprising given that truancy and school drop-out are two key factors that negatively impact on the overall lives of youth with significant substance misuse problems, contributing to poor educational achievements (Spooner et al., 1996) – and literacy and intellectual disabilities often complicate the clinical and educational picture (Catalano et al., 1990-1991). Treatment programmes that include schooling to further patients' education have been shown to promote better outcomes for youth (Catalano et al., 1990-1991) through providing opportunities for young people to develop life skills and promote self-esteem and responsibility (Tubman, 1995).

While poor family bonding and dysfunction have been shown to be important predictors of poor treatment outcomes (Friedman, Terras and Kreisher, 1995; Muck et al., 2001), the inclusion of families in treatment has been shown to improve treatment retention and treatment outcomes (Catalano et al., 1990-1991). Studies that incorporate family therapy have demonstrated improved bonding and relationships with clients, thus improving support networks as well as working with families as a unit to provide a sense of belonging and understanding for clients and their families (Spooner et al., 2001). Connectedness to school and family has been shown to be a particularly important protective factor in adolescents, lessening associations with antisocial peers and decreasing the risk of a range of psychosocial and health problems, including further the development and chronicity of substance use problems (Resnick, Bearman, Blum, Bauman, Harris, Jones et al., 1997).

1.4.2.5 *Summary of dynamic client characteristics and treatment characteristics*

Despite a great deal of uncertainty about the role of fixed client characteristics in young people's decisions to stay in or leave AOD treatment, there is a clearer picture emerging of dynamic client characteristics.

While only a limited range of dynamic client characteristics has been examined to date, evidence suggests that internal motivation to engage in treatment is an important factor in contributing to longer treatment retention. In addition, a range of programme-related variables has been associated with treatment retention. Research in this area indicates that treatment retention is greater in services:

- Staffed with clinicians experienced in working with young people.
- That provide an opportunity for young people to address a broad range of issues
- That provide support in multiple areas, including the provision of aftercare and schooling.

1.5 SUMMARY OF LITERATURE REVIEW

- Adolescence is a developmental life stage beginning with puberty and ending with social independence. Although a variety of time periods define adolescence, a pragmatic span of 13-18 years maps well on to puberty and secondary schooling in New Zealand.
- Substance use, abuse and dependence need to be carefully differentiated. Substance dependence is the primary diagnostic term. Addiction is increasingly equated with moderate-severe dependence. Substance use disorder refers to either substance dependence or substance abuse.
- Most New Zealand adolescents have used nicotine and alcohol by age 18 and nearly half have tried cannabis, which is in line with other Western countries' data. The use of stimulants and hallucinogens by New Zealand adolescents has increased over the past 5-10 years, but prevalence rates are still less than 10% by age 18.
- About 20-25% of New Zealand adolescents have developed alcohol and/or cannabis abuse or dependence by age 18, with the prevalence in young woman outnumbering young men in early adolescence but overtaken by young men by late adolescence. About 12% of adolescents have a substance use disorder combined with conduct disorder and affective disorder (mood or anxiety) by age 18. It is unclear how clinically significant these research diagnoses are and how persistent the syndromes are into adulthood. Māori are overrepresented in those with multiple diagnoses. The vast majority of those with these diagnoses do not seek treatment.
- Co-morbidity is common (up to 75%) in adolescents presenting for substance dependence treatment. The most common disorders are conduct disorder, ADHD and mood and anxiety disorders. The more severe the substance dependence, the more likely there are to be complicating co-morbid mental health problems.
- Other problems, including disengagement from school, family conflict, low educational achievement and criminality, are also common among youth presenting for AOD treatment.
- Treatment efficacy is commonly related to treatment retention. However, high rates of treatment drop-out among young people attending AOD treatment services highlights the need to better understand what makes young people stay in or leave AOD treatment.
- The few studies to date that have examined factors associated with treatment retention have focused on examining fixed client characteristics (age, gender, ethnicity, severity of substance use etc.) and programme-related variables (staff experience and attitudes, service approach and philosophy etc.). More recently, a new category of 'dynamic client characteristics' has begun being examined. Included in this category of variables are motivation and readiness for treatment, as well as clients' perceptions of their problems.
- A number of methodological issues plague this area of research, including the small number of studies being conducted with small sample sizes, using diverse definitions of retention, across a broad range of treatment modalities.
- Research examining fixed client characteristics has produced inconclusive findings on which fixed characteristics are associated with treatment retention. To date, the only real conclusion drawn from these studies is that fixed client characteristics alone are not sufficient to explain what makes young people stay in or leave AOD treatment.

- Although newly emerged, research examining dynamic client characteristics is proving more useful in providing information about client-related variables associated with treatment retention. In studies examining motivation as a more dynamic process, internal motivation to engage in treatment has been consistently associated with longer treatment retention. Other dynamic client characteristics have not been investigated in as much depth, but further research in this area is likely to prove helpful in determining other dynamic client characteristics associated with treatment retention.
- Programme-related variables have consistently been shown to be associated with treatment retention. In particular, variables such as level of staff experience, staff/client relationships and services that address the holistic needs of young people have been associated with longer treatment retention. Further research is called for to better delineate the association between these factors and the interaction between programme-related variables and fixed and dynamic client characteristics.

PART 2

RESEARCH PROJECT

2.1 METHODOLOGY

2.1.1 Participants

Participants qualified for inclusion in this study if they had attended one of eight youth-specific AOD services selected to take part in the study during 2003 or 2004.

Potential participants were required to have attended at least one appointment with the service, with the intention of engaging in further treatment with that service. For privacy reasons, each treatment service was asked to generate a list of all clients who had attended the service in 2003/04, to code this list then send it to the research team for randomisation. Once randomised, the lists were returned to the treatment services. Designated staff in each service then contacted each of the clients according to the order in which they appeared on the randomised list to inform them about the study and gain permission for their contact details to be passed on to the researchers. Recruitment staff for the project had been identified by each service and all recruitment staff received training on the study and recruitment methods before beginning the recruitment process.

Initially it was intended to recruit 140 participants based on estimates of numbers attending each of the eight services, the availability of recruitment staff and estimates of an approximately one-third uptake rate. The participant make-up would have been:

- 30 each from the Youth Speciality Service, Christchurch, and the Odyssey House Christchurch Youth Day Programme.
- 20 from the Odyssey House Auckland Youth Residential Service.
- 15 each from the Waireka Kaupapa Māori Residential Programme for Rangatahi, Tupu Alcohol and Drug Services; Te Atea Marino Regional Māori Alcohol and Drug Service; and Rongo Atea Youth Residential Drug and Alcohol Treatment Service.

When one of the services had to withdraw from the study (for reasons described below), the CADS (Community Alcohol and Drug Services Auckland) Altered High Youth Service became involved. It was intended to recruit 15 participants from this service.

It proved extremely difficult to recruit young people who had been in a treatment service up to three and a half years before being contacted about the study. Multiple sources were used to make contact, initially using contact details from client files at each treatment service. Extensive effort went into following up a number of links identified from client files including phoning, texting and writing letters. When these efforts were exhausted, the White Pages and electoral roll were searched and schools and other agencies contacted for contact details if appropriate.

Despite these extensive efforts, the recruitment rate was low (18.2%). Consequently, ethical permission was obtained for recruitment staff at three of the treatment services (one day/residential and two outpatient services) to collect demographic data on those participants who had not agreed to be interviewed or could not be contacted. (The three services were the only ones still involved in the study when the decision was made to collect this additional data and had the staff capacity to do so.) These data have been useful in providing an overall description of young people attending youth-specific AOD treatment services in New Zealand and enabling a comparison between participants and non-participants.

Potential participants who agreed to be contacted by the researcher became the participants of this study (n=79). The file searches completed for those who could not be recruited make up the non-participant group in this study (n=105), making a total of 184.

2.1.2 Treatment services

Participants were recruited retrospectively from eight youth AOD treatment services in Auckland (four services), Hamilton (one), Hawkes Bay (one) and Christchurch (two). They all provided youth-specific AOD treatment and represented a range of youth AOD treatment services available in New Zealand, including day, residential and outpatient services and Māori- and Pacific-specific services. Appendix A has a full description of these services.

2.1.3 Recruitment issues

While it was initially intended to recruit 140 participants from seven youth-specific treatment services in New Zealand, only 79 participants were recruited and interviewed. The reasons for this low recruitment rate are diverse but worthy of comment, as they outline the difficulties encountered in this study. They should also be considered in terms of wider issues for service provision and future research into youth AOD treatment.

Barriers to recruitment related to the availability of resources, i.e. staff and time, and the limited success in contacting potential participants.

2.1.3.1 Resource issues: A constant state of flux

One of the greatest barriers to recruiting participants in this study related to the high staff turnover rate in each of the participating services and its associated disruption within youth AOD treatment services.

Six of the eight services involved in the study experienced staff losses and/or complete service restructuring during the study that severely affected their capacity to help with the research. Staff losses at management level led to delays in getting the recruitment process underway, while those at recruitment level (where people who were being relied on to recruit and/or interview participants left the service) led to delays in recruitment and data collection.

One service in particular experienced a combination of management change, clinical and administration staff losses and service restructuring, so despite its best efforts had to withdraw from the study with only minimal participants recruited. This resulted in 71 potential participants not being approached.

Another youth service was then brought into the study, but given a shortened timeframe could only attempt to recruit the first 45 participants from its randomised recruitment list. This meant another 130 potential participants were not approached to be involved in the study. In addition, a further 26 potential participants were not approached by another treatment service owing to a shortened recruitment timeframe because of changing management and programme restructuring issues.

These issues illustrate the context in which youth AOD services are operating in New Zealand – a context of flux. As the results of this study show, programme-related variables are some of the most important factors associated with greater treatment retention. These variables highlight the vital role that staff play in running successful youth AOD treatment programmes. It is of great concern, therefore, that staff attrition is so high in youth AOD services in New Zealand.

2.1.3.2 Contacting potential participants

Recruitment problems were exacerbated by the fact that contacting participants to gain their consent to be involved in the study was very time consuming; it took much longer than initially anticipated.

The process was hampered by out-of-date contact details in participants' treatment files, reflecting the transient nature of this population and, of greater concern, the lack of a longer-term treatment and recovery perspective. Given the potential long-term nature of substance use disorders, it would be expected that clients would have a continuing care plan that included an aftercare component and connection with a primary care provider.

Although it is beyond the scope of this study to explore why aftercare is not a regular feature of youth AOD treatment in New Zealand, it appears (after discussions with various treatment providers) that this is due, in large part, to a lack of funding for aftercare services for youth. It is also possible that even with funding these services could be difficult to provide owing to the seeming transience of this population.

Comments from the study recruitment team highlighted another concern associated with this transience: not only do young people appear to be disconnected from the treatment services, many also appeared to be disconnected from their immediate families. Recruiters indicated that a number of family members to whom they had spoken no longer had any contact with the young person being recruited. This appeared to be especially problematic for services recruiting participants in the Auckland area.

While some level of disconnection from families may be adaptively functional for young people from families with drug and alcohol misuse issues, it seems unlikely that this is the case for all the

young people in this study who were no longer in contact with their families. Such high levels of disconnection from such important sources of support reiterate the need for aftercare services to provide ongoing support and a source of connection for these young people.

2.1.4 Data sources

Data were collected from four main sources: participant interviews, clinician questionnaires and participant and non-participant file searches.

2.1.4.1 Participant interviews

Participants were interviewed using a structured questionnaire that included a variety of instruments used to explore:

- Sociodemographic details.
- Circumstances surrounding entry to treatment.
- Factors associated with treatment retention.
- Perceptions of AOD treatment.
- History of substance use, including types of substance used at treatment and substance use diagnoses at treatment and at time of interview.
- Psychiatric history at treatment and time of interview.
- Impulsivity and novelty seeking.
- Perceptions of improvement and associated treatment efficacy.
-

Appendix B has a full description of the measures used.

Interviews took place on a one-to-one basis at a location of the participant's choice (normally their home or the treatment service) and lasted approximately one and a half hours. Where this was not possible, interviews were conducted by phone. Most participants completed the interview in one session, but a few chose to complete the interview over two to three sessions. At the completion of each interview, participants were given \$20 music vouchers (or \$20 phone cards if they were interviewed in a correctional facility).

Informed consent was gained from all participants after they had been given a comprehensive overview of the study and assured that their anonymity and confidentiality would be preserved at all times. This study gained approval from the Canterbury, Auckland, Waikato and Hawkes Bay Health and Disabilities Ethics Committees.

Interviews with participants from the South Island services were conducted by trained interviewers from the National Addiction Centre. Interviews with participants from the North Island services were conducted by trained interviewers nominated by each treatment service. All interviewers were trained by one of the principal investigators from the National Addiction Centre, who also checked all interviews for consistency.

2.1.4.2 Participant file searches

All 79 participants gave permission for searches of their files at the treatment services they attended. These searches provided information such as exact admission and discharge dates and number of sessions attended, types of substance used before treatment entry, substance use and psychiatric diagnoses at treatment entry and reasons for discharge. The searches were completed by either the interviewer or the recruiter from each treatment service.

2.1.4.3 Clinician questionnaires

Each participant consented to a brief questionnaire being sent to their primary clinician at the treatment service at the time of treatment. The primary clinician was identified during the participant file search and the person completing the search sent the questionnaire to them. Clinicians were asked to provide details of their clients' treatment experiences, including the three main reasons they believed the young person stayed in treatment and the three main reasons the young person left treatment when they did.

2.1.4.4 Non-participant file searches

Recruiters in three of the treatment services undertook file searches for clients on their randomized recruitment lists who could not be recruited to the study. Data were also collected on:

- Sociodemographic details, such as the client's age, gender, ethnicity, living circumstances and whether they had ever been convicted of a crime or spent time in a justice facility or in foster care.
- Source of referral and programme type.

2.1.5 Measures of treatment retention

2.1.5.1 Length of stay

Treatment retention was measured separately for each treatment modality. For day and residential services, it was measured as the length of stay in months and days. For outpatient services, treatment length of stay was measured as the number of sessions attended.

2.5.1.2 Early drop-out

To enable comparisons across the whole participant sample, a variable was created to represent early drop-out from treatment.

'Early drop-out' was defined as leaving outpatient treatment after one or two sessions and leaving day/residential treatment within the first month of treatment. These cut-offs were chosen on the basis of perceived clinical practice and fall well below the mean stay of 3.4 months in day/residential treatment and 6.4 sessions in outpatient treatment. They indicate a group of young people who drop out of treatment well before the average client.

This group is especially interesting to look at because, given such short 'doses' of treatment, clients are less likely to receive many benefits from treatment. To provide optimal AOD treatment for the increasing numbers of youth requiring it, it is beneficial to identify factors associated with early drop-out. This may help services to decide on the type of young people they will accept into treatment and identify aspects of their service that they need to improve to accommodate all young people requiring their help.

2.1.6 Analysis

Quantitative data were entered into SPSS (Statistical Package for the Social Sciences, Version 14.0), which generated descriptive and comparative summaries.

Chi-Square tests for independence, Fisher's Exact Tests, Spearman's Rank Order Correlation and Kruskal Wallis non-parametric ANOVAs were performed to explore relationships between independent variables and treatment modality, study inclusion and retention measures. McNemar tests were performed to test concordance between participant self-report and file report of substance use and mental health diagnosis. Statistical significance was inferred when $p < 0.05$.

2.2 RESULTS

This section provides an overview of the major findings of this study. It provides:

- A comprehensive description of a sample of young people attending youth AOD services in New Zealand in 2003 and 2004. These data are gathered from file searches and interviews of participants and from file searches of non-participants.
- A more detailed description of the young people involved in this study, both as a whole and the similarities and differences between treatment modalities.
- A discussion of the factors associated with treatment retention according to treatment modality and early drop-out.

2.2.1 Total sample description: participants and non-participants

A total of 714 young people were identified as meeting the criterion of having attended one of the eight treatment services for at least one assessment interview with the intention of returning for further treatment.

On closer analysis, 54 (7.6%) were deemed ineligible for any of four reasons:

- They had attended an assessment and were not recommended for further treatment.
- Their name appeared twice on the list.
- Their file could not be found.
- They were attending the service but had not attended the AOD stream of that service.

Of the remaining 660 possible participants, the availability of service resources (discussed previously) meant that no attempt was made to contact a further 227 (31.8%) young people.

Of the now-reduced pool of 433, 313 (72.3%) could not be contacted despite extensive attempts, 41 (9.5%) declined to participate and 79 (18.2%) were interviewed. As already discussed, this final number of recruited participants was significantly lower than the anticipated one-third recruitment uptake.

2.2.1.1 *Sociodemographic profile*

Data are reported for the 79 participants interviewed (referred to as 'participants') and a selection (n=105) of the 330 young people who were not recruited for the study because they could not be contacted or declined to participate (referred to as the 'non-participants').

Table 1 shows sample characteristics of the study participants (n=79) and non-participants (n=105). Taken as a whole, the variables it outlines provide a snapshot of the characteristics of a sample of 184 young people who attended eight youth-specific AOD treatment services in New Zealand during 2003 or 2004.

- These youth were between 13 and 20 years of age when they entered treatment, with a median age of 16.1 years.
- Most clients in the services were male (62.0%) and represented three main ethnic groups: European (51.1%), Māori (37.0%), and Pacific (8.2%).
- Most young people were referred from sources such as education, health and family (68.3%) and almost a quarter were referred by the justice/court system (24.0%). Very few (7.7%) had self-referred to treatment.
- On entering treatment, most young people were living with family members (76.5%), with smaller numbers living independently in flatting or boarding situations (8.7%) or living in foster care (8.7%). A small group (6.0%) were living in controlled environments such as a youth justice or care and protection facility when they entered treatment.
- High rates of criminal offending were noted among this sample, with slightly more than half (56.4%) reported to have had a criminal conviction before entering treatment.

2.2.1.2 *Substance use and psychiatric profile*

The rates of substance use disorder recorded at treatment varied according to substance type, with most participants presenting with a diagnosis of cannabis abuse (60.9%) followed by alcohol abuse (52.2%), cannabis dependence (50.0%) and alcohol dependence (32.1%). Diagnoses for other substances such as nicotine, inhalants, stimulants, hallucinogens and opioids were reported too infrequently or inconsistently to be accurately presented in Table 1.

Table 1: Sociodemographic and Psychiatric Profile of a Sample of Young People who Attended Eight Youth AOD Treatment Services in New Zealand During 2003/2004 (n=184)

Variables	Total Sample (n=184)	Participants (n=79)	Non-Participants (n=105)	p ^a
Median Age at Treatment (years)	16.1	16.1	16.2	0.62 ^b
Range (years)	(13.4-19.6)	(13.8-19.6)	(13.4-18.8)	
Gender (%)				0.13
Male	114 (62.0)	44 (55.7)	70 (66.7)	
Female	70 (38.0)	35 (44.3)	35 (33.3)	
Ethnicity (%)				0.09
European	94 (51.1)	33 (41.8)	61 (58.1)	
Māori	68 (37.0)	36 (45.6)	32 (30.5)	
Pacific	15 (8.2)	8 (10.1)	7 (6.7)	
Other	7 (3.8)	2 (2.5)	5 (4.8)	
Living Circumstances at Tx (%)	(n=183)	(n=79)	(n=104)	0.37
Family	140 (76.5)	63 (79.7)	77 (74.0)	
Independent	16 (8.7)	6 (7.6)	10 (9.6)	
Foster Care	16 (8.7)	4 (5.1)	12 (11.5)	
Controlled Environment	11 (6.0)	6 (7.6)	5 (4.8)	
Criminal Conviction at Tx (%)	(n=181)	(n=79)	(n=102)	0.66
Yes	102 (56.4)	46 (58.2)	56 (54.9)	
Substance Use Diagnosis at Tx (%)	(n=184)	(n=79)	(n=105)	
Alcohol Dependence	59 (32.1)	26 (32.9)	33 (31.4)	0.90
Alcohol Abuse	96 (52.2)	40 (50.6)	56 (53.3)	0.52
Cannabis Dependence	92 (50.0)	42 (53.2)	50 (47.6)	0.60
Cannabis Abuse	112 (60.9)	49 (62.0)	63 (60.0)	0.27
Mental Health Diagnosis at Tx (%)				
Conduct Disorder	69 (37.5)	18 (22.8)	51 (48.6)	0.00**
Depression	42 (23.0)	21 (26.6)	21 (20.2)	0.31
ADHD	26 (14.1)	9 (11.4)	17 (16.2)	0.36
Co-Existing Disorder				0.01*
SUD and MHD	99 (53.8)	38 (48.1)	61 (58.1)	
No Diagnosis	37 (20.1)	12 (15.2)	25 (23.8)	
SUD Only	35 (19.0)	24 (30.4)	11 (10.5)	
MHD Only	13 (7.1)	5 (6.3)	8 (7.6)	

*p < 0.05

**p < .01

a. Chi-Square analysis unless otherwise indicated

b. Mann-Whitney U

Three main mental health diagnoses were reported in participant files: 37.5% of the sample were diagnosed with conduct disorder, 23.0% with depression and 14.1% with ADHD. Diagnoses of other psychiatric disorders were reported too inconsistently to provide useful information in this context.

This sample had high levels of recorded co-morbidity, with 53.8% of participants presenting with at least one substance use disorder (SUD) and one mental health disorder (MHD). Almost a quarter (20.1%) of participants had no mental health or substance use disorder recorded in their client files when they entered treatment.

2.2.1.3 Treatment profile

Table 2 provides an overview of these young people's treatment profiles. In this sample, 72 young people attended day or residential services.

- Most young people attending these types of service stayed between one and four months (56.9%). Just over a quarter (27.8%) stayed for more than four months, while 15.3% dropped out of treatment within the first month.
- The remainder of the sample (n=112) attended outpatient treatment, where 26.8% of clients dropped out of treatment after one or two sessions, 33.9% stayed for three to five sessions and 39.3% stayed for six or more sessions.

Table 2: Treatment Profile of a Sample of Young People Who Attended Eight Youth AOD Treatment Services in New Zealand in 2003/2004

Variables	Total Sample (n=184)	Participants (n=79)	Non-Participants (n=105)	p ^a
Source of Referral (%)	(n=183)	(n=78)	(n=105)	0.08
Other Referred	125 (68.3)	47 (60.3)	78 (74.3)	
Justice Referred	44 (24.0)	22 (28.2)	22 (21.0)	
Self-Referred	14 (7.7)	9 (11.5)	5 (4.8)	
Reason for Discharge (%)				0.78
Conducive to Tx	94 (51.1)	38 (48.1)	56 (53.3)	
Not Conducive to Tx	88 (47.8)	40 (50.6)	48 (45.7)	
Still Attending	2 (1.1)	1 (1.3)	1 (1.0)	
Early Drop-outs				0.62
Yes	41 (22.3)	19 (24.1)	22 (21.0)	
No	143 (77.7)	60 (75.9)	83 (79.0)	
Treatment Length				
Day/Residential	(n=72)	(n=42)	(n=30)	0.65
< 1 month	11 (15.3)	7 (16.7)	4 (13.3)	
1-4 months	41 (56.9)	22 (52.4)	19 (63.3)	
4+ months	20 (27.8)	13 (31.0)	7 (23.3)	
Outpatient	(n=112)	(n=37)	(n=75)	0.48
1-2 sessions	30 (26.8)	12 (32.4)	18 (24.0)	
3-5 sessions	38 (33.9)	10 (27.0)	28 (37.3)	
6+ sessions	44 (39.3)	15 (40.5)	29 (38.7)	

a. Chi-Square analysis unless otherwise indicated

2.2.1.4 Differences between participants and non-participants

Tables 1 and 2 indicate that participants and non-participants were similar across most variables examined – the exceptions being that more non-participants than participants were diagnosed as having conduct disorder when they entered treatment (p=0.000) and significantly more participants than non-participants presented at treatment with a substance use disorder only (p=0.007).

2.2.1.5 Gender differences

Table 3 shows a number of gender differences that emerged across the sample as a whole.

Females entered treatment at a significantly younger age than males (15.6 and 16.4 years respectively) and significantly more males (81.9%) than females (18.1%) attended a day/residential treatment service. However, approximately equal proportions of males (49.1%) and females (50.9%) entered outpatient services. Females who entered outpatient services were also likely to attend significantly more treatment sessions (5.0) than males (4.0).

While no gender differences emerged in substance use diagnoses, there were significant differences in the types of psychiatric diagnosis that males and females presented with at entry to treatment. Females were significantly more likely than males to meet criteria for depression (61.9% vs 38.1% respectively), while males comprised 85.5% of those who met criteria for conduct disorder and 96.2% of those who met criteria for ADHD. In addition, 77.5% of those who reported they had a criminal conviction when they entered treatment were male.

Table 3: Significant Differences by Gender on Sociodemographic, Psychiatric and Treatment Variables of the Total Sample (n=184)

Variables	Total Sample (n=184)	Males (n=114)	Females (n=70)	<i>p</i> ^a
Median Age at Treatment (years)	16.1	16.4	15.6	0.00 ^{**b}
Treatment Type				0.00 ^{**}
Day/Residential	72 (39.1)	59 (81.9)	13 (18.1)	
Outpatient	112 (60.9)	55 (49.1)	57 (50.9)	
Criminal Conviction at Tx (%)	(n=181)	(n=111)	(n=70)	0.00 ^{**}
Yes	102 (56.4)	79 (77.5)	23 (22.5)	
Mental Health Diagnosis at Tx (%)				
Conduct Disorder (n=184)	69 (37.5)	59 (85.5)	10 (14.5)	0.00 ^{**}
Depression (n=183)	42 (23.0)	16 (38.1)	26 (61.9)	0.00 ^{**}
ADHD	26 (14.1)	25 (96.2)	1 (3.8)	0.00 ^{**}
Outpatient Treatment	(n=110)	(n=53)	(n=57)	0.03 ^{*b}
Median Number of Sessions Attended	4.0	4.0	5.0	

**p* < 0.05

***p* < 0.01

a. Chi-Square analysis unless otherwise indicated

b. Mann-Whitney U

2.2.2 Participant description by treatment modality at treatment entry

Table 4 provides a more detailed overview of the characteristics of the 79 participants when they entered treatment. It presents a breakdown according to treatment modality to ascertain any differences between young people attending day/residential programmes and those attending outpatient programmes.

- Of the participant sample, 42 (53.2%) attended a day/residential service and 37 (46.8%) an outpatient treatment service.

2.2.2.1 *Sociodemographic profile*

The median age of participants in both treatment modalities was similar, at 16.2 years for those in day/residential and 16.1 years for those in outpatient programmes.

As noted previously, there were gender differences within treatment modalities, with significantly more male participants attending day/residential treatment (71.4%) and significantly more female participants attending outpatient services (62.2%). Differences in the day/residential settings were expected as they reflected the general gender breakdown in these services. However, approximately equal numbers of males (49.1%) and females (50.9%) presented for outpatient treatment. These results indicate that among our participant sample males who attended outpatient services were underrepresented.

Differences were also found in the way day/residential and outpatient participants were referred to treatment. Significantly more participants ($p=0.008$) from outpatient settings (78.4%) were referred to treatment by sources such as health, education and family (other referred) than those in day/residential treatment (43.0%). Those from day/residential settings were more likely to be referred by the courts or justice system (39.0%) or to have self-referred to treatment (17.1%). In keeping with this finding, significantly more participants from day/residential settings were found to have had a criminal conviction when they entered treatment (69.0%) than those in outpatient settings (45.9%) ($p=0.038$).

Similar to the sample as a whole, participants' living circumstances when they entered treatment were largely family based, with no differences noted between day/residential and outpatient participants (81.0% and 78.4% respectively).

2.2.2.2 *Treatment profile*

The main reasons for participants being discharged from treatment differed according to treatment modality.

While most outpatient participants (62.2%) were reported by clinicians to have left treatment for reasons conducive to their treatment (i.e. they had met treatment goals, had returned to school, had gained employment, had completed court conditions etc.), significantly fewer participants (35.7%) from day/residential settings were reported to have left for these positive reasons. Clinicians indicated that participants leaving day/residential settings did so for reasons that were not conducive to treatment (64.3%), such as for disciplinary reasons, not attending treatment and continued use of substances.

2.2.2.3 *Substance use and psychiatric profile*

Participants from all treatment modes had similar diagnosis rates of nicotine, alcohol and cannabis dependence as reported on files kept by the treatment services.

Substance use diagnoses for other substances were not compared because small numbers of people presented with these diagnoses. File searches revealed that 53.2% of all participants had been diagnosed with cannabis dependence, 50.6% nicotine dependence, 32.9% alcohol dependence, 6.3% inhalant dependence, 3.8% stimulant dependence, 1.3% opioid dependence and 1.3% hallucinogen dependence.

Table 4: Sociodemographic Details and Psychological Profile of All Participants at Treatment Entry

Variables	All Participants (n=79)	Day/Residential (n=42)	Outpatient (n=37)	p ^a
Median Age at Tx (years)	16.1	16.1	16.1	0.61 ^b
Range (years)	(13.8-19.6)	(13.8-19.6)	(13.9-18.1)	
Gender (%)				0.00
Male	44 (55.7)	30 (71.4)	14 (37.8)	**
Female	35 (44.3)	12 (28.6)	23 (62.2)	
Ethnicity (%)				0.00
European	33 (41.8)	16 (38.1)	17 (45.9)	** ^c
Māori	36 (45.6)	26 (61.9)	10 (27.0)	
Pacific	8 (10.1)	0 (0)	8 (21.6)	
Other	2 (2.5)	0 (0)	2 (5.4)	
Sexual Orientation (%)				0.34
Heterosexual	73 (92.4)	40 (95.2)	33 (89.2)	
GLBT ^e	6 (7.6)	2 (4.8)	4 (10.8)	
Living Circumstances at Tx (%)				0.22
Family	63 (79.7)	34 (81.0)	29 (78.4)	
Independent	6 (7.6)	5 (11.9)	1 (2.7)	
Foster Care	4 (5.1)	1 (2.4)	3 (8.1)	
Controlled Environment	6 (7.6)	2 (4.8)	4 (10.8)	
Criminal Conviction at Tx (%)				0.04
Yes	46 (58.2)	29 (69.0)	17 (45.9)	*
Substance Use Diagnosis at Tx (%)				
Nicotine Dependence	40 (50.6)	20 (47.6)	20 (54.1)	0.57
Alcohol Dependence	26 (32.9)	13 (31.0)	13 (35.1)	0.92
Cannabis Dependence	42 (53.2)	23 (54.8)	19 (51.4)	0.95
Inhalant Dependence	5 (6.3)			
Stimulant Dependence	3 (3.8)			
Opioid Dependence	1 (1.3)			
Hallucinogen Dependence	1 (1.3)			
AUDIT^f Score at Tx (median)	23.00	26.00	19.00	0.08 ^b
Range	(0-40)	(0-40)	(0-35)	
CUDIT^g Score at Tx (median)	24.50	30.00	18.00	0.01
Range	(0-38)	(0-38)	(0-37)	* ^b
Mental Health Diagnosis at Tx (%)				
Conduct Disorder	18 (22.8)	10 (23.8)	8 (21.6)	0.82
Depression	21 (26.6)	9 (21.4)	12 (32.4)	0.27
ADHD	9 (11.4)	7 (16.7)	2 (5.4)	0.16 ^d
Co-Existing Disorder at Tx (%)				0.98
SUD and MHD	38 (48.1)	20 (47.6)	18 (48.6)	
No Diagnosis	12 (15.2)	6 (14.3)	6 (16.2)	
SUD Only	24 (30.4)	13 (31.0)	11 (29.7)	
MHD Only	5 (6.3)	3 (7.1)	2 (5.4)	
Source of Referral (%)	(n=78)	(n=41)	(n=37)	0.01
Other Referred	47 (60.3)	8 (19.5)	29 (78.4)	*
Justice Referred	22 (28.2)	6 (14.6)	6 (16.2)	
Self-Referred	9 (11.5)	7 (17.1)	2 (5.4)	
Reason for Discharge (%)	(n=79)	(n=41)	(n=37)	0.01
Conducive to Tx	38 (48.1)	15 (36.6)	23 (62.2)	* ^c
Not Conducive to Tx	40 (50.6)	27 (66.3)	13 (35.1)	
Still Attending	1 (1.3)	0 (0)	1 (2.7)	

*p < 0.05

**p < 0.01

a. Chi-Square analysis unless otherwise indicated

b. Mann-Whitney U

c. Corrected for low cell numbers

d. Fisher's Exact Test

e. Gay, Lesbian, Bisexual, Transgender (GLBT)

f. Alcohol Use Disorder Identification Test (AUDIT)

g. Cannabis Use Disorder Identification Test (CUDIT)

Despite similar rates of substance dependence reported across treatment modalities, differences in CUDIT scores between those who attended day/residential settings and those who attended outpatient settings (30.0 and 18.0 respectively) indicate that the severity of cannabis dependence among those attending day/residential services was greater than among those in outpatient settings (p=0.011).

No differences in psychiatric diagnosis or co-existing disorders were found between participants in different treatment modalities. In terms of mental health diagnosis, 22.8% of all participants had a diagnosis of conduct disorder when they entered treatment, 26.6% a diagnosis of depression and 11.4% a diagnosis of ADHD. It is likely that psychiatric diagnoses among these participants were underrepresented owing to psychiatric assessments not taking place or diagnoses not being recorded on treatment files.

2.2.2.3.1 *Underreporting of psychiatric and substance use diagnoses*

Table 5 illustrates this issue by presenting the proportions of ‘not stated’ diagnoses of substance use disorders on client treatment files.

Table 5: Reports of Substance Use Diagnosis from File Report Data for Participants and Non-Participants

Substance Use Diagnosis (n=184)	Yes (%)	No (%)	Not Stated (%)
Nicotine Dependence	28 (42.4)	1 (0.5)	105 (57.1)
Alcohol Dependence	59 (32.1)	54 (29.3)	71 (38.6)
Alcohol Abuse	96 (52.2)	18 (9.8)	70 (38.0)
Cannabis Dependence	92 (50.0)	31 (16.8)	61 (33.2)
Cannabis Abuse	112 (60.9)	11 (6.0)	61 (33.2)
Inhalant Dependence	6 (3.3)	154 (83.7)	24 (13.0)
Inhalant Abuse	11 (6.0)	149 (81.0)	24 (13.0)
Stimulant Dependence	7 (3.8)	146 (79.3)	31 (16.8)
Stimulant Abuse	12 (6.5)	141 (76.6)	31 (16.8)
Opioid Dependence	2 (1.1)	172 (93.5)	10 (5.4)
Opioid Abuse	2 (1.1)	172 (93.5)	10 (5.4)
Hallucinogen Dependence	1 (0.5)	157 (85.3)	26 (14.1)
Hallucinogen Abuse	2 (1.1)	156 (84.8)	26 (14.1)

It is evident from Table 5 that there were a number of occasions when a diagnosis of substance use disorder for a particular substance was not given. It is important to note that if the use of a particular substance was not mentioned in the treatment file, or if the substance had been used fewer than 10 times, participants were deemed not to have a diagnosis for this particular substance and the diagnosis was coded ‘no’. The ‘not stated’ category was only assigned when a substance was reported in the file to have been used more than 10 times but no diagnosis for that substance was given.

Using this definition, it is possible that criteria for dependence or abuse were not met for this substance and therefore not recorded. However, it is also possible that an individual met the criteria for abuse or dependence on a particular substance but a specific assessment was not made, so this was not reported. Comments written on participant file searches indicated that lack of assessment, rather than lack of reporting, was the main reason for substance use diagnoses not being made.

An exception to this definition of 'not stated' was made for nicotine dependence. Because nicotine use was seldom recorded on treatment records, but participants reported very high rates of nicotine use (97% had used nicotine more than 10 times in their life and the mean age of nicotine smoking onset was 11.7 years), 'not stated' was coded for nicotine dependence even if nicotine use was not recorded on the treatment file. In this sense 'not stated' refers to limited reporting of nicotine dependence and nicotine use.

The limited reporting of substance use and psychiatric diagnosis was further confirmed when self-reported diagnoses of various disorders at treatment were compared with file report diagnoses. Table 6 reveals significant discrepancies between participants' perceptions of their mental health diagnoses and file reports of these diagnoses. However, these discrepancies were not so evident for diagnoses of substance use disorder. In both day/residential and outpatient settings it appeared that:

- In about 30% of the cases there were discrepancies in diagnoses of depression where participants reported they did have a diagnosis of depression at treatment but this was not recorded in their files.
- Treatment services' underreporting of ADHD (21.6% of cases) and conduct disorder (45.9% of cases) compared with participant self-report was only found among participants attending outpatient services. However, there was a trend approaching statistical significance of conduct disorder being underreported by day/residential treatment services (34.2% of cases).

Table 6: Discordance between File and Self-Report of Substance Use and Mental Health Diagnosis for All Participants Separated by Treatment Type

Variables	Concordance (%)	Not Reported by Participant	Not Reported by File	p^a
SUD Diagnosis at Tx – Day Residential (%)				
Alcohol Dependence (n=23)	78.3	1 (4.3)	4 (17.4)	0.38
Cannabis Dependence (n=27)	66.7	3 (11.1)	6 (22.2)	0.51
Inhalant Dependence (n=34)	91.1	1 (2.9)	2 (5.9)	1.00
Stimulant Dependence (n=28)	85.7	0 (0)	4 (14.3)	
Opioid Dependence (n=34)	88.2	0 (0)	4 (11.8)	
SUD Diagnosis at Tx – Outpatient (%)				
Alcohol Dependence (n=24)	54.2	3 (12.5)	8 (33.3)	0.23
Cannabis Dependence (n=26)	84.6	0 (0)	4 (15.4)	0.13
Inhalant Dependence (n=34)	82.3	0 (0)	6 (17.6)	0.03*
Stimulant Dependence (n=32)	80.0	1 (2.9)	6 (17.1)	0.13
Opioid Dependence (n=35)	91.5	0 (0)	3 (8.6)	0.25

Mental Health Diagnosis at Tx – Day/Residential (%)				
Depression (n=38)	63.1	2 (5.3)	12 (31.6)	0.01*
Conduct Disorder (n=38)	55.3	4 (10.5)	13 (34.2)	0.05
ADHD (n=38)	52.7	5 (13.2)	13 (34.2)	0.10
Mental Health Diagnosis at Tx – Outpatient (%)				
Depression (n=37)	62.1	2 (5.4)	12 (32.4)	0.01*
Conduct Disorder (n=37)	51.3	1 (2.7)	17 (45.9)	0.00**
ADHD (n=37)	75.7	1 (2.7)	8 (21.6)	0.04*

*p < 0.05. **p < 0.01.

a. McNemar test

A number of issues must be considered, particularly those relating to differences in the way the data were collected and the difficulties in relying on participants' retrospective recall about the status of their mental health and substance use when they first entered treatment. However, issues still remain for treatment services around diagnostic assessment and the reporting of that assessment, and should be investigated further.

2.2.3 Participant description by treatment modality at time of interview

2.2.3.1 Current sociodemographic profile

Table 7 presents additional participant details, with an overview of their current sociodemographic, psychiatric and substance use status.

- At the time of interview, participants' ages ranged from 15.4 to 22.6 years, with a median of 18.25 years. The time between treatment entry and interview ranged from about nine months to over three and a half years.
- While most participants continued to live with family members at the time of interview (59.5%), they were increasingly living independently (24.1%) or in a controlled environment (16.5%).
- Very few participants were engaged in secondary schooling at the time of interview (16.5%); most (60.8%) were either employed or students (or both) and nearly one-third (30.4%) were unemployed.

2.2.3.2 Current substance use and psychiatric profile

Current psychiatric and substance use diagnoses measured by the Mini International Neuro Psychiatric Interview (M.I.N.I.) (see Appendix B) indicated that these young people continued to have significant substance use problems, with 47.4% meeting criteria for a current diagnosis of alcohol dependence, 46.1% cannabis dependence, 11.8% stimulant dependence and 1.3% inhalant or opioid dependence. There were no differences on these variables found between treatment modalities.

Similarly, there were no differences between treatment modalities on current AUDIT (median score = 13.5) and CUDIT (median score = 9.0) scores, although current scores for all participants

were lower than those reported at treatment in Table 3 (AUDIT median score = 23.0, CUDIT median score = 24.5).

High rates of psychiatric diagnosis were also identified, with 22.2% meeting the diagnostic criteria for current conduct disorder and 17.3% for current depression. For lifetime diagnoses, 33.8% met the criteria for ADHD. In addition, a large number (64.0%) of the young people reported they had witnessed or experienced a traumatic event in their lifetime. However, few had a diagnosis of post-traumatic stress disorder (PTSD) (8.0%).

2.2.3.3 Current treatment profile

As indicated in Table 8, a large majority of participants (92.1%) reported that their overall wellbeing had improved since they had entered treatment, and 76.2% reported that the treatment service they had attended had helped with this improvement. A very small number of participants (6.3%) reported that their overall wellbeing had decreased since they entered treatment and 1.6% reported they had remained the same. Participants' perceptions of wellbeing and service help were similar across treatment services.

Table 7: Sociodemographic Details and Psychological Profiles of All Participants at Time of Interview

Variables	All Participants (n=79)	Day/ Residential (n=42)	Outpatient (n=37)	p ^a
Median Age at Interview (years)	18.25	18.33	18.25	0.71 ^b
Range (years)	15.42-22.58	15.75-22.58	15.42-20.83	
Median Length of Time Between Admission and Interview (years)	2.07	2.09	2.02	0.93 ^b
Range (years)	0.73-3.89	0.73-3.64	1.11-3.89	
Current Living Circumstances (%)				0.39
Family	47 (59.5)	22 (52.4)	25 (67.6)	
Independent	19 (24.1)	12 (28.6)	7 (18.9)	
Controlled Environment	13 (16.5)	8 (19.0)	5 (13.5)	
Currently Engaged in Secondary Schooling (%)	13 (16.5)	6 (14.3)	7 (18.9)	0.58
Yes				
Current Employment Status				0.41
Employed/Student	48 (60.8)	22 (52.4)	26 (70.3)	
Unemployed	24 (30.4)	15 (35.7)	9 (24.3)	
Other	7 (8.9)	5 (11.9)	2 (5.4)	
Current Substance Use Diagnosis (%)	(n=76)	(n=39)	(n=37)	
Alcohol Dependence	36 (47.4)	20 (51.3)	16 (43.2)	0.48
Cannabis Dependence	35 (46.1)	15 (38.5)	20 (54.1)	0.17
Stimulant Dependence	9 (11.8)	4 (10.3)	5 (13.5)	0.73 ^c
Inhalant Dependence	1 (1.3)			
Opioid Dependence	1 (1.3)			
Current AUDIT Score (median)	13.5	15.0	12.0	0.25 ^b
Current CUDIT Score (median)	9.0	12.0	7.0	0.22 ^b
Current Mental Health Diagnosis (%)				
Conduct Disorder (n=72)	16 (22.2)	9 (25.0)	7 (19.4)	0.57
Depression (n=75)	13 (17.3)	9 (23.7)	4 (10.8)	0.14

Agoraphobia (n=75)	10 (13.3)	4 (10.5)	6 (16.2)	0.52 ^c
PTSD (n=75)	6 (8.0)			
Experienced Traumatic Event (n=75)	48 (64.0)	27 (71.1)	21 (56.8)	0.20
Social Phobia (n=75)	8 (10.7)	6 (15.8)	2 (5.4)	0.26 ^c
Panic Disorder (n=75)	4 (5.3)			
Anorexia Nervosa (n=75)	0 (0)			
ADHD Lifetime (n=74)	25 (33.8)	16 (43.2)	9 (24.3)	0.09

a. Chi-Square analysis unless otherwise indicated

b. Mann-Whitney U

c. Fisher's Exact Test

The variables in Table 8 are measures of the clinicians' perceptions of why participants remained in treatment for as long as they did and why they left treatment when they did.

- Clinicians across treatment modalities did not differ in their perceptions. However, it is interesting to note that, in general, clinicians were more likely to report programme and/or external factors as the reason for clients staying in treatment (57.6%), while they cited individual client-related factors most often as the reason for clients leaving treatment (68.9%).
- This finding indicates that many clinicians believe that the reason for most clients leaving treatment early lies in client-related variables such as lack of motivation, ongoing substance use, types of substance being used and co-existing mental health issues. Conversely, clinicians perceive that the reasons clients stay in treatment are more likely to be related to programme-related variables, such as getting on with staff, fitting in well with the staff and other young people and being engaged in the programme.

Table 8: Treatment Profiles of All Participants at Time of Interview

Variables	All Participants (n=79)	Day/Residential (n=42)	Outpatient (n=37)	p ^a
Treatment Length				
Day/Residential				
< 1 month		7 (16.7)		
1-4 months		22 (52.4)		
4+ months		13 (31.0)		
Outpatient				
1-2 sessions			12 (32.4)	
3-5 sessions			10 (27.0)	
6+ sessions			15 (40.5)	
Early Drop-outs				0.10
Yes	19 (24.1)	7 (16.7)	12 (32.4)	
No	60 (75.9)	35 (83.3)	25 (67.5)	
Current General Wellbeing (%)	(n=63)	(n=32)	(n=31)	0.32
Better	58 (92.1)	31 (96.9)	27 (87.1)	
Worse	4 (6.3)	1 (3.1)	3 (9.7)	
Same	1 (1.6)	0 (0)	1 (3.2)	
Overall Service Help (%)				0.34
Yes	48 (76.2)	26 (81.3)	22 (71.0)	

Clinician Why Stay (%)	(n=66)	(n=36)	(n=30)	0.12 ^b
Individual	6 (9.1)	1 (2.8)	5 (16.7)	
Programme/External	38 (57.6)	25 (69.4)	13 (43.3)	
Individual and Programme/External	22 (33.3)	10 (27.8)	12 (40.0)	
Clinician Why Leave (%)	(n=74)	(n=39)	(n=35)	0.52
Individual	51 (68.9)	29 (74.4)	22 (62.9)	
Programme/External	8 (10.8)	3 (7.7)	5 (14.3)	
Individual and Programme/External	15 (20.3)	7 (17.9)	8 (22.9)	

a. Chi-Square analysis unless otherwise indicated

b. Corrected for low cell numbers

2.2.4 Retention factors by treatment modality

Tables 9 and 10 present the factors associated with retention in outpatient services. A range of client and programme characteristics was measured and very few variables of either type were found to be associated with treatment retention measured as number of sessions attended.

Table 9: Sociodemographic, Substance Use and Psychiatric Factors Associated with Treatment Retention Among a Sample of Young People Attending AOD Treatment in Outpatient Treatment Services

Variables	1-2 Sessions (n=12)	3-5 Sessions (n=10)	6+ Sessions (n=15)	<i>p</i> ^a
Mean Age at Treatment (years)	16.26	16.05	15.80	0.93 ^b
Gender (%)				0.47
Male	5 (41.7)	5 (50.0)	4 (26.7)	
Female	7 (58.3)	5 (50.0)	11 (73.3)	
Ethnicity (%)				0.97
European	6 (50.0)	4 (40.0)	7 (46.7)	
Māori	3 (25.0)	3 (30.0)	4 (26.7)	
Pacific	3 (25.0)	2 (20.0)	3 (20.0)	
Other	0 (0)	1 (10.0)	1 (6.7)	
Living Circumstances at Tx (%)				0.47
Family	9 (75.0)	8 (80.0)	12 (80.0)	
Independent	0 (0)	0 (0)	1 (6.7)	
Controlled Environment	2 (16.7)	2 (20)	0 (0)	
Foster Care	1 (8.3)	0 (0)	2 (13.3)	
Ever Convicted of a Crime (%)				0.92
Yes	5 (41.7)	5 (50.0)	7 (46.7)	
Source of Referral (%)				0.28
Other Referred	10 (83.3)	7 (70.0)	12 (80.0)	
Justice Referred	2 (16.7)	3 (30.0)	1 (6.7)	
Self-Referred	0 (0)	0 (0)	2 (13.3)	
Reason for Discharge (%)				0.14
Conducive to Tx	5 (41.7)	6 (60.0)	12 (80.0)	
Not Conducive to Tx	7 (58.3)	4 (40.0)	2 (13.3)	
Still Attending	0 (0)	0 (0)	1 (6.7)	
Year at Treatment				0.41
2003	7 (58.3)	3 (30.0)	7 (46.7)	
2004	5 (41.7)	7 (70.0)	8 (53.3)	
Substances Used > 10x at Tx (%)				0.42
Nicotine	7 (58.3)	4 (40.0)	10 (66.7)	
Alcohol	10 (83.3)	9 (90.0)	14 (93.3)	0.70
Cannabis	12 (100)	10 (100)	11 (73.3)	0.04*
Inhalants	2 (16.7)	3 (30.0)	4 (26.7)	
Stimulants	2 (16.7)	2 (20.0)	3 (20.0)	
Opioids	1 (8.3)	0 (0)	2 (13.3)	
Hallucinogens	2 (16.7)	1 (10.0)	1 (6.7)	
Tranquilisers	1 (8.3)	0 (0)	1 (6.7)	
Substance Use Diagnosis at Tx (%)				0.40
Nicotine Dependence	6 (50.0)	4 (40.0)	10 (66.7)	
Alcohol Dependence	2 (16.7)	5 (50.0)	6 (40.0)	0.55
Cannabis Dependence	4 (33.3)	9 (90.0)	6 (40.0)	0.03*
Inhalant Dependence	2 (16.7)	0 (0)	1 (6.7)	
Stimulant Dependence	1 (8.3)	1 (10.0)	1 (6.7)	
Opioid Dependence	0 (0)	0 (0)	1 (6.7)	
Hallucinogen Dependence	1 (8.3)	0 (0)	0 (0)	
AUDIT Score at Tx (mean)	15.83	16.10	23.47	0.06 ^b
CUDIT Score at Tx (mean)	18.50	17.30	22.67	0.16 ^b
First Age of Substance Use (mean years)				0.36
Nicotine (n=34)	13.45	10.50	12.85	
Alcohol (n=36)	13.18	10.90	12.13	0.24 ^b
Cannabis (n=36)	13.83	12.20	12.57	0.05 ^b
Mental Health Diagnosis at Tx (%)				0.01*
Depression	3 (25.0)	0 (0)	9 (60.0)	
Conduct Disorder	3 (25.0)	3 (30.0)	2 (13.3)	0.58
ADHD	0 (0)	2 (20.0)	0 (0)	

**p* < 0.05.

a. Chi-Square analysis unless otherwise indicated

b. Spearman's Rho

Table 10: Client and Programme Variables and Perceptions of Treatment Efficacy Associated with Treatment Retention Among a Sample of Young People Attending AOD Treatment in Outpatient Treatment Services

Variables	1-2 Sessions (n=12)	3-5 Sessions (n=10)	6+ Sessions (n=15)	p^b
ATRQ^c Subscales				
Fixed Client Characteristics				
Mother Substance User	0.50	1.00	0.70	0.83
Father Substance User	0.96	1.05	1.04	0.71
Peers Substance Users	3.06	2.80	3.24	0.62
Experiencing Cravings	2.00	1.22	1.45	0.17
Dynamic Client Characteristics				
Perceived Problem with Substance Use	1.92	1.87	1.84	0.50
Internally Motivated to Attend Treatment	1.17	2.20	2.13	0.13
Externally Motivated to Attend Treatment	3.58	3.30	2.80	0.05
Substance-Related Treatment Goals	1.17	1.90	1.31	0.62
Treatment Goals Achieved	2.00	1.72	1.89	0.68
Expected Positive General Life Outcomes	1.33	2.23	2.31	0.10
Expected Positive AOD Outcomes	1.67	2.22	2.40	0.22
Important to Complete Treatment	1.91	2.60	2.33	0.64
Treatment as Expected	1.92	1.40	1.80	0.90
Programme Characteristics				
Treatment Goals Set and Involved	1.36	2.95	2.67	0.08
Good Relationship with Staff	2.35	2.85	2.76	0.17
Felt Connected to Programme	2.75	3.17	2.98	0.79
Fun Important in Programme	2.04	2.90	1.90	0.25
Transportation Issues	0.90	0.36	0.93	0.31
Treatment Format Useful	2.00	2.45	2.80	0.43
Whanau/Friend Involvement Useful	2.00	1.88	2.50	0.97
Current General Wellbeing (%)	(n=9)	(n=9)	(n=13)	0.40^a
Better	9 (100)	7 (77.8)	11 (84.6)	
Worse	0 (0)	1 (11.1)	2 (15.4)	
Same	0 (0)	1 (11.1)	0 (0)	
Overall Service Help (%)				0.48^a
Yes	5 (55.6)	7 (77.8)	10 (76.9)	

a. Chi-Square analysis

b. Spearman's Rho unless otherwise indicated

c. Addiction Treatment Retention Questionnaire (ATRQ)

2.2.4.1 *Fixed client or earlier characteristics associated with treatment retention in outpatient settings*

- Although having used cannabis more than 10 times ($p=0.037$) and having a diagnosis of depression ($p=0.006$) appeared to be significantly correlated with staying in treatment longer, these findings should be considered with caution given statistical issues that emerged relating to small cell counts for these variables.

- Similar caution should be applied to the finding suggesting that having a diagnosis of cannabis dependence may be associated with remaining in treatment for a medium (three to five sessions) but not longer period (six or more sessions) of time ($p=0.031$).
- Trends towards significance should also be noted for AUDIT scores at treatment and the older age of onset of cannabis use. Both variables are associated with longer treatment stays ($p=0.060$ and $p=0.048$ respectively).

2.2.4.2 *Dynamic client characteristics and programme-related variables associated with treatment retention in outpatient settings*

As indicated in Table 10, no dynamic client characteristics or programme-related variables were found to be associated with treatment retention in outpatient services.

However, a trend towards significance is noted for the dynamic client characteristic of external motivation for treatment. Those participants who agreed with the statement that they attended treatment because other people thought they should do something about their AOD problems (i.e. were externally motivated to attend treatment) were also found to drop out of treatment earlier ($p=0.05$).

2.2.4.3 *Variables associated with treatment retention in day/residential settings*

A similar pattern of findings emerged for participants who had attended day/residential settings, with several variables indicating trends towards significance but none emerging as statistically significant. Tables 11 and 12 illustrate the variables examined.

- Being discharged for a reason conducive to treatment (e.g. met treatment goals, returned to school/work) was associated with a trend towards longer treatment retention ($p=0.056$).
- Having used alcohol more than 10 times ($p=0.077$) and scoring higher on measures of novelty seeking ($p=0.070$) were also marginally associated with longer stays in treatment. Results such as these may be interpreted as supporting the theory that those who have experienced more problems as a result of their substance misuse might be more likely to remain in treatment. However, a lack of significant findings of other variables that indicate the severity of difficulties experienced (i.e. diagnoses of dependence, criminal convictions, source of referral etc.) severely undermines this interpretation.
- The only significant finding that emerged as being associated with retention among this group of young people was a negative association between experiencing cravings for substances and length of stay in treatment – i.e. those participants who agreed that cravings for substances made them leave treatment had shorter lengths of stay in treatment ($p=0.043$). If the experience of cravings is taken as an severity indicator of issues with substance use, the ‘greater difficulties, better retention’ hypothesis is further undermined.

Table 11: Sociodemographic, Substance Use and Psychiatric Factors Associated with Treatment Retention Among a Sample of Young People Attending AOD Treatment in a Day or Residential Treatment Setting

Variables	< 1 Month (n=7)	1-4 Months (n=22)	4+ Months (n=13)	p ^a
Mean Age at Treatment (years)	16.05	16.45	16.00	0.63 ^b
Gender (%)				0.98
Male	5 (71.4)	16 (72.7)	9 (69.2)	
Female	2 (28.6)	6 (27.3)	4 (30.8)	
Ethnicity (%)				0.95
European	3 (42.9)	8 (36.4)	5 (38.5)	
Māori	4 (57.1)	14 (63.6)	8 (61.5)	
Pacific	0 (0)	0 (0)	0 (0)	
Other	0 (0)	0 (0)	0 (0)	
Living Circumstances at Tx(%)				0.49
Family	7 (100)	15 (68.2)	12 (92.3)	
Independent	0 (0)	4 (18.2)	1 (7.7)	
Controlled Environment	0 (0)	2 (9.1)	0 (0)	
Foster Care	0 (0)	1 (4.5)	0 (0)	
Ever Convicted of a Crime (%)				0.29
Yes	6 (85.7)	16 (72.7)	7 (53.8)	
Source of Referral (%)				0.15
Other Referred	3 (50.0)	10 (45.5)	5 (38.5)	
Justice Referred	3 (50.0)	10 (45.5)	3 (23.1)	
Self-Referred	0 (0)	2 (9.1)	5 (38.5)	
Reason for Discharge (%)				0.06
Conducive to Tx	0 (0)	8 (36.4)	7 (53.8)	
Not Conducive to Tx	7 (100)	14 (63.6)	6 (46.2)	
Year at Treatment				0.60
2003	3 (42.9)	8 (36.4)	7 (53.8)	
2004	4 (57.1)	14 (63.6)	6 (46.2)	
Substances Used > 10x at Tx (%)				
Nicotine	4 (57.1)	9 (40.9)	5 (38.5)	0.70
Alcohol	6 (85.7)	22 (100)	13 (100)	0.08
Cannabis	7 (100)	22 (100)	12 (92.3)	0.32
Inhalants	1 (14.3)	7 (31.8)	2 (15.4)	
Stimulants	4 (57.1)	4 (18.2)	5 (38.5)	
Opioids	2 (28.6)	0 (0)	2 (15.4)	
Hallucinogens	3 (42.9)	3 (13.6)	5 (38.5)	
Tranquilisers	0 (0)	0 (0)	1 (7.7)	
Substance Use Diagnosis at Tx (%)				
Nicotine Dependence (n=42)	2 (28.6)	10 (45.5)	6 (46.2)	0.86
Alcohol Dependence (n=26)	1 (33.3)	9 (56.3)	3 (42.9)	0.70
Cannabis Dependence (n=30)	2 (66.7)	15 (88.2)	6 (60.0)	0.22
Inhalant Dependence (n=37)	0 (0)	1 (5.3)	1 (8.3)	
Stimulant Dependence (n=31)	0 (0)	0 (0)	0 (0)	
Opioid Dependence (n=37)	0 (0)	0 (0)	0 (0)	
Hallucinogen Dependence (n=32)	0 (0)	0 (0)	0 (0)	
AUDIT Score at Tx (mean)	23.33	21.14	26.23	0.07 ^b
CUDIT Score at Tx (mean)	22.50	24.45	28.38	0.43 ^b
First Age of Substance Use (mean years)				
Nicotine (n=34)	12.50	10.45	11.54	0.84 ^b
Alcohol (n=36)	11.67	11.84	11.38	0.62 ^b
Cannabis (n=36)	11.50	11.88	11.42	0.49 ^b
NS^c Total (mean)	12.67	12.85	14.50	0.07 ^b
BIS^d Total (mean)	81.17	75.70	81.25	0.24 ^b
Mental Health Diagnosis at Tx (%)	(n=7)	(n=22)	(n=13)	
Depression	3 (42.9)	4 (18.2)	2 (15.4)	0.31
Conduct Disorder	1 (14.3)	6 (27.3)	3 (23.1)	0.78
ADHD	2 (28.6)	3 (13.6)	2 (15.4)	0.64

a. Chi-Square analysis unless otherwise indicated

b. Spearman's Rho

c. Novelty Seeking (NS)

d. Barratt Impulsivity Scale (BIS)

Table 12: Client and Programme Variables and Perceptions of Treatment Efficacy Associated with Treatment Retention Among a Sample of Young People Attending AOD Treatment in a Day or Residential Treatment Setting

Variables	< 1 Month (n=7)	1-4 Months (n=22)	4+ Months (n=13)	p^b
ATRQ Subscales				
Fixed Client Characteristics				
Mother Substance User	0.17	1.20	1.15	0.48
Father Substance User	0.50	1.89	1.82	0.45
Peers Substance Users	3.39	3.29	3.21	0.62
Experiencing Cravings	2.00	1.57	0.92	0.04*
Dynamic Client Characteristics				
Perceived Problem with Substance Use	1.94	1.71	1.20	0.21
Internally Motivated to Attend Treatment	1.50	2.00	1.68	0.50
Externally Motivated to Attend Treatment	3.50	3.05	1.20	0.10
Substance-Related Treatment Goals	1.22	2.10	2.05	0.53
Treatment Goals Achieved	1.50	1.50	2.50	0.45
Expected Positive General Life Outcomes	2.50	2.50	3.21	0.08
Expected Positive AOD Outcomes	2.08	2.08	2.96	0.11
Important to Complete Treatment	2.17	2.16	2.92	0.20
Treatment as Expected	1.17	1.43	1.46	0.28
Programme Characteristics				
Treatment Goals Set and Involved	2.50	2.05	3.00	0.47
Good Relationship with Staff	2.53	2.82	3.13	0.14
Felt Connected to Programme	2.72	3.17	3.13	0.26
Fun Important in Programme	3.25	3.30	3.50	0.70
Transportation Issues	0.67	0.50	0.40	0.82
Treatment Format Useful	2.50	2.28	2.85	0.30
Whanau/Friend Involvement Useful	3.00	1.88	3.07	0.89
Current General Wellbeing (%)	(n=5)	(n=17)	(n=10)	0.63^a
Better	5 (100)	16 (94.1)	10 (100)	
Worse	0 (0)	1 (5.9)	0 (0)	
Same	0 (0)	0 (0)	0 (0)	
Overall Service Help (%)				0.37^a
Yes	3 (60.0)	14 (82.4)	9 (90.0)	

* $p < 0.05$

a. Chi-Square analysis

b. Spearman's Rho unless otherwise indicated

2.2.5 Retention factors by early drop-out

An early drop-out variable was created to enable comparisons between outpatient settings and day/residential settings. 'Early drop-out' was defined as having left outpatient treatment after attending only one or two sessions and having left day/residential treatment within the first month of treatment.

Table 15 indicates that a number of dynamic client [characteristics](#) and programme-related variables were able to differentiate between early drop-outs and early engagers. However, Tables

13 and 14 indicate that very few fixed client characteristics were associated with treatment retention.

2.2.5.1 Fixed client characteristics associated with early treatment drop-out

The only fixed client characteristic found to be significantly associated with early treatment drop-out was the age of onset of nicotine use. Contrary to expectations, starting to smoke nicotine at an older age was associated with early treatment drop-out. This finding may be affected by the small number of participants (n=34) who responded to this question, so should be interpreted with caution.

Table 13: Sociodemographic Factors Associated with Early Drop-Out Among a Sample of Young People Attending AOD Treatment in a Day, Residential or Outpatient Treatment Setting

Variables	All Participants (n=79)	Early Drop-Outs (n=19)	Early Engagers (n=60)	p ^a
Median Age at Treatment (years)	16.08	16.16	16.07	0.76 _b
Gender (%)				0.76
Male	44 (55.7)	10 (52.6)	34 (56.7)	
Female	35 (44.3)	9 (47.4)	26 (43.3)	
Ethnicity (%)				0.57
European	33 (41.8)	9 (47.4)	24 (40.0)	
Māori	36 (45.6)	7 (36.8)	29 (48.3)	
Pacific	8 (10.1)	3 (15.8)	5 (8.3)	
Other	2 (2.5)	0 (0)	2 (3.3)	
Living Circumstances at Tx(%)				0.52
Family	63 (79.9)	16 (84.2)	47 (78.3)	
Independent	6 (7.6)	0 (0)	6 (10.0)	
Controlled Environment	6 (7.6)	2 (10.5)	4 (6.7)	
Foster Care	4 (5.1)	1 (5.3)	3 (5.0)	
Ever Convicted of a Crime (%)				0.97
Yes	46 (58.2)	11 (57.9)	35 (58.3)	
Source of Referral (%)				0.20
Other Referred	47 (60.3)	13 (72.2)	34 (56.7)	
Justice Referred	22 (28.2)	5 (27.8)	17 (28.3)	
Self-Referred	9 (11.5)	0 (0)	9 (15.0)	
Reason for Discharge (%)				0.07
Conducive to Tx	38 (48.1)	5 (26.3)	33 (55.0)	
Not Conducive to Tx	40 (50.6)	14 (73.7)	26 (43.3)	
Still Attending	1 (1.3)	0 (0)	1 (1.7)	
Year at Treatment				0.40
2003	35 (44.3)	10 (52.6)	25 (41.7)	
2004	44 (55.7)	9 (47.4)	35 (58.3)	

a. Chi-Square analysis unless otherwise stated

b. Mann-Whitney U

Table 14: Substance Use and Psychiatric Factors Associated with Early Drop-Out Among a Sample of Young People Attending AOD Treatment in a Day, Residential or Outpatient Treatment Setting

Variables	All Participants (n=79)	Early Drop-Outs (n=19)	Early Engagers (n=60)	p ^a
Substances Used > 10x at Tx (%)				
Nicotine	39 (49.4)	11 (57.9)	28 (46.7)	0.39
Alcohol	74 (93.7)	16 (84.2)	58 (96.7)	0.09 ^c
Cannabis	74 (93.7)	19 (100)	55 (91.7)	0.33 ^c
Inhalants	19 (24.1)	3 (15.8)	16 (26.7)	0.54 ^c
Stimulants	20 (25.3)	6 (31.6)	14 (23.3)	0.55 ^c
Opioids	7 (8.9)	3 (15.8)	4 (6.7)	0.35 ^c
Hallucinogens	15 (19.0)	5 (26.3)	10 (16.7)	0.34 ^c
Tranquilisers	3 (3.8)	1 (5.3)	2 (3.3)	0.57 ^c
Substance Use Diagnosis at Tx (%)				
Nicotine Dependence (n=79)	40 (50.6)	10 (52.6)	30 (50.0)	0.84
Alcohol Dependence (n=50)	26 (52.0)	3 (30.0)	23 (57.5)	0.16 ^c
Cannabis Dependence (n=56)	42 (75.0)	6 (66.7)	36 (76.6)	0.68 ^c
Inhalant Dependence (n=71)	5 (7.0)	2 (11.1)	3 (5.7)	0.60 ^c
Stimulant Dependence (n=66)	3 (4.5)	1 (6.7)	2 (3.9)	0.55 ^c
Opioid Dependence (n=72)	1 (1.4)	0 (0)	0 (0)	
Hallucinogen Dependence (n=68)	1 (1.5)	0 (0)	0 (0)	
AUDIT Score at Tx (median)	23.00	21.00	24.00	0.28 ^b
CUDIT Score at Tx (median)	24.50	19.00	26.50	0.17 ^b
First Age of Substance Use (median years)				
Nicotine (n=34)	12.00	13.00	11.00	0.01 ^{*b}
Alcohol (n=36)	12.00	13.00	12.00	0.13 ^b
Cannabis (n=36)	12.00	12.50	12.00	0.10 ^b
NS Total (median)	13.00	14.00	13.00	0.10 ^b
BIS Total (median)	77.00	76.00	77.00	0.73 ^b
Current Mental Health Diagnosis (%)				
Depression	21 (26.6)	6 (31.6)	15 (25.0)	0.58
Conduct Disorder	18 (22.8)	4 (21.1)	14 (23.3)	1.00 ^c
ADHD	9 (11.4)	2 (10.5)	7 (11.7)	1.00 ^c
Co-Existing Disorder				0.58
SUD and MHD	38 (48.1)	9 (47.4)	29 (48.3)	
No Diagnosis	12 (15.2)	4 (21.1)	8 (13.3)	
SUD Only	24 (30.4)	4 (21.1)	20 (33.3)	
MHD Only	5 (6.3)	2 (10.5)	3 (5.0)	

*p < 0.05.

- a. Chi-Square analysis unless otherwise stated
- b. Mann-Whitney U
- c. corrected for low cell numbers

Table 15: Client and Programme Variables and Perceptions of Treatment Efficacy Associated with Early Drop-Out Among a Sample of Young People Attending AOD Treatment in a Day, Residential or Outpatient Treatment Setting

Variables	All Participants (n=79)	Early Drop-Outs (n=19)	Early Engagers (n=60)	p ^a
ATRQ Subscales (median)				
Fixed Client Characteristics				
Mother Substance User	0.00	0.00	0.25	0.13
Father Substance User	1.00	0.50	1.50	0.08
Peers Substance Users	3.33	3.33	3.33	0.95
Experiencing Cravings	1.00	1.00	1.00	0.05
Dynamic Client Characteristics				
Perceived Problem with Substance Use	2.00	1.67	2.00	0.91
Internally Motivated to Attend Treatment	2.00	1.00	2.00	0.03*
Externally Motivated to Attend Treatment	3.00	4.00	3.00	0.01*
Substance-Related Treatment Goals	1.50	1.00	1.67	0.04*
Treatment Goals Achieved	2.00	1.75	2.00	0.24
Expected Positive General Life Outcomes	2.67	1.50	2.83	0.00**
Expected Positive AOD Outcomes	2.63	1.63	3.00	0.01*
Important to Complete Treatment	3.00	1.50	3.00	0.17
Treatment as Expected	1.00	1.50	1.00	0.69
Programme Characteristics				
Treatment Goals Set and Involved	3.00	1.50	3.00	0.00**
Good Relationship with Staff	3.00	2.75	3.00	0.00**
Felt Connected to Programme	3.00	3.00	3.00	0.07
Fun Important in Programme	3.00	2.75	3.00	0.08
Transportation Issues	1.00	1.00	1.00	0.60
Treatment Format Useful	3.00	3.00	3.00	0.15
Whanau/Friend Involvement Useful	3.00	3.00	3.00	0.61
Current General Wellbeing (%)				
Better	58 (92.1)	14 (100)	44 (89.8)	0.46
Worse	4 (6.3)	0 (0)	4 (8.2)	
Same	1 (1.6)	0 (0)	1 (2.0)	
Overall Service Help (%)				
Yes	48 (76.2)	8 (57.1)	40 (81.6)	0.08

*p < 0.05

**p < 0.01

a. Chi-Square analysis unless otherwise stated

2.2.5.2 *Dynamic client characteristics and programme-related variables associated with early treatment drop-out*

Consistent with other findings on fixed client characteristics, the fixed client characteristics measured by the Addiction Treatment Retention Questionnaire (social context of substance use) were also found to be not related to treatment retention. However, a number of dynamic client characteristics were.

Dynamic characteristics are defined as such because they are characteristics over which the individual has some control i.e. they can alter them over time. Five of the nine dynamic client characteristics examined were found to be associated with early treatment drop-out.

Participants were more likely to drop out of treatment early if they:

- Reported less internal motivation ($p=0.028$) and greater external pressure ($p=0.014$) to engage in treatment.
- Were less likely to have set abstinence as a goal for their substance use ($p=0.035$).
- Were less likely to expect that treatment would help them to make changes in their lives in general ($p=0.003$) and in relation to their substance use specifically ($p=0.008$).

A number of programme-related variables were also found to either be significantly associated with treatment drop-out or indicate a trend towards significance. A highly significant association was found between participants' perceptions of being involved in the process of goal-setting and treatment retention. Participants were significantly more likely to drop out of treatment early if they:

- Felt they had failed to set clear treatment goals and had not been included in the process of setting treatment goals ($p=0.001$).
- Reported less positive experiences with treatment staff in terms of feeling safe, comfortable and supported by staff and being able to express themselves openly and honestly to staff ($p=0.004$).

In addition, the variables of not feeling connected to the treatment programme ($p=0.066$) and not having fun during the programme (0.077) showed trends towards being significantly associated with treatment drop-out.

2.3 SUMMARY

- This study aimed to examine client and programme-related factors associated with treatment retention among young people attending AOD treatment services in New Zealand. This is the first study of its kind in New Zealand and some useful information has emerged on the characteristics of young people attending treatment services in New Zealand and factors associated with treatment retention.
- This was a particularly difficult group of young people to track down. The problems experienced in recruiting for this study highlighted a number of more general issues, including the transient nature of this population, a concerning level of disconnection from family and a lack of resources available to treatment services to enable follow-up of young people who leave treatment to ensure adequate aftercare.
- Young people who attended AOD treatment in New Zealand during 2003 and 2004 presented with a range of complex issues, including substance use and mental health issues, criminality, family conflict and disengagement from school. This was as true for outpatient services as for day and residential services, although there is some indication that young people who attended day or residential services presented with even more complex issues. In addition to the presence of co-morbid mental health and substance use disorders, young people attending day/residential settings tended to be more engaged in criminal lifestyles and had more severe cannabis dependence.
- Significant gender differences emerged across the sample as a whole. While males and females presented to treatment with similar difficulties with their substance use

(consistent with gender differences identified in the literature), females were more likely to present with internalising disorders such as depression, while males were more likely to present with externalising disorders such as conduct disorder or ADHD. In addition, females entered treatment at a younger age than males and were less likely to report they had ever had a criminal conviction.

- In analysing file report data, it was apparent that many treatment services had limited records of mental health and substance use diagnoses on individual treatment files. The limited reporting of nicotine use and misuse was particularly obvious, but limited reporting of diagnoses for all other substances was also noted. This issue was further highlighted by the high discordance rates between file reports of diagnosis at treatment entry and participant self-report. Although it is beyond the scope of this study to determine the direction of this discordance, this is an important issue to note both for future research and for service improvement.
- Very few factors were found to be associated with treatment retention when treatment modalities were examined separately. Among participants attending day/residential settings, the only variable found to be associated with shorter stays in treatment was the experience of cravings for substances. For participants in outpatient settings, the only factor suggesting a trend towards statistical significance was the external motivation to attend treatment, with participants who experienced external pressure to attend treatment being more likely to drop out of treatment early.
- Clinicians' perceptions of what makes young people stay in or leave treatment confirmed that many believe young people drop out of AOD treatment because of client-related issues. Conversely, they perceive that young people remain in AOD treatment because of programme-related variables.
- A variable of early drop-out was created to enable comparisons between treatment modalities. Early drop-out was defined as leaving outpatient treatment after one or two sessions and leaving day/residential treatment within the first month of treatment. Based on these criteria a number of variables depicting dynamic client characteristics and programme-related variables were found that approached statistical significance, or were significantly associated with treatment drop-out.
- Dynamic client characteristics associated with longer stays in treatment included being internally motivated to attend treatment and having an expectation that treatment would be helpful in producing positive general life and AOD-related outcomes. Programme-related variables associated with treatment retention included having a good relationship with programme staff and feeling involved in the treatment process and about decisions being made during treatment. Additionally, an emerging trend was noted around feeling connected to the programme and experiencing the programme as fun. Although this association did not quite meet statistical significance, it appears that these two variables may also be important in helping young people to stay in treatment.

PART 3

CONCLUSIONS AND RECOMMENDATIONS

3.1 CONCLUSIONS

This study provided an opportunity to examine the factors related to treatment retention among youth attending AOD treatment services in New Zealand. It also provided an opportunity to develop a profile of the young people who use these services.

Understanding the service users and how current treatment approaches impact on their treatment journey and recovery is an essential component in enhancing ongoing service development. For this reason, considerable thanks go to the eight treatment services that agreed to be involved in this study. To some extent they allowed their practices to be publicly scrutinised so that all treatment services can work towards improving addiction treatment for young people in New Zealand.

The study's findings support previous research indicating that dynamic client characteristics play an important role in treatment retention (De Leon et al., 1997). They also suggest that, for the most part, fixed client characteristics are not particularly useful in predicting who may stay in or leave treatment. Similar to this study, Melnick et al. (1997) found that a young person's internal motivation to engage in treatment is an important factor in longer treatment retention. To the best of our knowledge, previous studies have not examined how factors such as expectations about treatment are related to treatment retention. Positive results from the current study suggest this may be useful to explore in future research.

The finding that dynamic client characteristics play a role in what makes young people stay in or leave AOD treatment means that treatment services, and the individuals attending them, can work together to improve treatment retention – which fits with the idea of treatment as a client journey that is influenced by a multitude of factors.

There is limited potential for service providers to influence client engagement and retention when the focus is primarily on fixed client characteristics – it can not only result in the creation of self-fulfilling prophecies, but also mean that young people who are perceived to be at risk of dropping out of treatment because of certain client characteristics are not accepted into services with long waiting lists and high demand. This study's findings and the inconsistent findings from other studies examining fixed client characteristics suggest that these characteristics cannot be relied on to provide an accurate picture of why a young person may stay in or leave treatment.

Programme-related variables, such as feeling connected to the programme, having a good relationship with staff and feeling empowered by the programme to have a say in areas such as goal-setting and what happens in treatment, were found to be associated with longer stays in treatment. These findings support existing literature, which suggests that staff attitudes and abilities to form relationships with young people in treatment have a significant impact on treatment retention (Friedman and Glickman, 1987; Orlando et al., 2003).

By being aware of dynamic client characteristics and programme-related variables that could impact on treatment retention, service providers have the opportunity to influence treatment retention and contribute to good client outcomes. Furthermore, recognising that factors such as internal motivation and expectations of treatment may impact on how long a young person stays in treatment provides specific areas to work on with a young person when they first enter treatment.

The conclusions from this study must be considered in relation to its methodological limitations, especially the small sample size and the retrospective nature of much of the data collected from participants (which means that many of the measures of pre-treatment characteristics and treatment experiences can only be viewed as proxies). The study should be viewed only as an initial attempt to research factors associated with AOD treatment retention among young people in New Zealand. To better understand factors associated with youth treatment retention, a multi-site, multimodal prospective study could be conducted aimed at investigating both treatment outcomes and treatment retention. Such research would provide improved information on the efficacy of youth AOD treatment in New Zealand while also enabling the factors associated with treatment retention to be further delineated. In addition, randomised controlled trials will be required to test more definitively the role of these putative factors in determining treatment retention.

3.2 RECOMMENDATIONS

Overall, this study's findings provide an opportunity to reflect on ways to work with young people presenting to AOD treatment services for help with substance use issues. This reflection should focus not only on treatment retention but also on the protocols for conducting and recording assessments and providing continuing care after treatment completion or drop-out.

The study's seven recommendations are that:

1. AOD treatment services understand, acknowledge and respond to clients' complex treatment needs

- Information gathered in this study indicates that all services dealt with young people presenting with a range of complex needs (e.g. substance use and mental health issues, criminality, family conflict and disengagement from school). However, these needs were not always universal across gender, with males and females presenting with different issues in relation to age, psychiatric co-morbidity and criminality.
- Given that the plight of young people in New Zealand has not improved significantly in the past three to four years, it is reasonable to assume that treatment services today are also working with young people presenting with a broad range of complex issues.
- It is important to acknowledge this complexity – not only through alerting funding bodies to the need to fund these services adequately, but also through ensuring that:
 - Staff working in youth AOD services receive adequate training and support, enabling them to be confident in their ability to provide youth-appropriate services that cater to the broad range of needs of youth in AOD treatment.

- Youth services have strong links with families and peer-based groups as well as other service providers within the health, education, justice and welfare sectors.
- Youth services can recognise and adequately cater for the differing needs of males and females who enter treatment.

2. Services are resourced to provide care continuum and continuity

- The difficulties experienced with recruiting participants to this study suggest that many young people who leave treatment become disconnected from two important sources of support: family and treatment services' specialist teams. This is particularly concerning given evidence that the provision of aftercare services is associated with longer-term treatment benefits. There is an urgent need, therefore, to ensure that:
 - Wherever possible, youth who attend AOD services are connected with a primary care provider who can be a long-term contact for the individual and their family.
 - Funding is made available to ensure that aftercare is a standard component of all treatment services.

3. Further attention is giving to better understanding the needs of young people with conduct disorder who attend AOD treatment

- The overrepresentation of young people with conduct disorder in the non-participant sample group and the under-representation of males in the outpatient participant group suggest there is a specific youth population that this study could not access. In future studies it will be important to make every attempt to access such individuals, as they could represent a particular type of young person with a different profile of factors associated with treatment retention. However, given the transient nature of this group and the apparent disconnection from their families, it seems that the only plausible means of doing this will be by conducting prospective studies where intensive efforts can be made to ensure regular contact with this group.
- The under-representation of young people with conduct disorder in the participant group and findings from previous research that having a diagnosis of conduct disorder is associated with poorer treatment retention and outcomes, suggest that future research is needed to delineate further the association between these variables. These young people appear to be the patients most likely to have co-existing conditions and life problems, and therefore are probably the most challenging group for whom to provide effective treatment.

4. Youth friendly comprehensive assessments are conducted and recorded as a standard process on treatment entry

- The discordance between participant self-reports and file reports of substance use and mental health diagnoses illustrates an ongoing issue for treatment services in accurately assessing and recording diagnoses. While it is possible that at least some of this discordance was a result of measurement issues within the study, the number of file searches that were returned indicating that an assessment had not been completed or a diagnosis had not been recorded tends to suggest that measurement issues were not solely responsible for the discrepancy.

- It is essential to ensure comprehensive assessment and recording of assessment data so that:
 - The diverse needs of all clients are identified.
 Comprehensive intervention plans are developed in collaboration with youth and their families or significant others.

5. Treatment focuses on dynamic client characteristics and programme factors

- A major limitation of this study was its inability to differentiate between treatment retention and treatment engagement (beyond the length of time an individual attends treatment). This distinction seems crucial, as inconclusive findings on the impact of treatment retention on treatment outcomes are likely, in part, to be due to a lack of knowledge about how much a person engages in treatment as opposed to just knowing how long they stay in treatment or whether they complete treatment. This area requires urgent research attention as it may play a crucial role in promoting an understanding of not only improved treatment retention but also improved treatment outcomes.
- The emergence of dynamic client characteristics and programme-related variables as factors associated with treatment retention highlights the importance of the interaction between clients and staff in treatment programmes. This finding strongly indicates the need for treatment providers to ensure their programmes focus on:
 - Promoting internal motivation.
 - Exploring clients' expectations.
 - Ensuring young people feel included in treatment decisions and the treatment process in general.
 - Building strong relationships between staff and clients.
 - Providing opportunities for young people to have fun while they are at treatment.
 - Working towards promoting a sense of connection and belonging to the treatment programme.

To achieve this, providers need to emphasise staff orientation, assessments of professional development needs and the provision of training to meet those needs.

6. Funding of youth AOD services to provide long term stability of youth AOD programmes

- Evidence from this study suggests significant instability in staff retention and service structures within youth AOD treatment services in New Zealand. In light of the positive associations between programme-related variables and treatment retention found in this and other studies, it is important that treatment services are resourced adequately to ensure that:
 - Youth AOD treatment services are recognised and maintained as specialist AOD services that are designed specifically to cater for the needs of young people.
 - Specific professional development training for staff working with youth with AOD issues is further developed and made available to all staff working in youth AOD treatment services. This should include information on adolescent biopsychosocial development, adolescent-specific AOD needs, models of youth participation, and

education about factors associated with positive treatment outcomes, including longer treatment retention.

7. Ongoing research is conducted in the area of youth treatment retention to allow further development in our understandings of this complex area

- The findings from the current study suggest the need to prioritise a randomised controlled trial to test the roles of dynamic client characteristics and programme-related variables in both treatment retention and treatment outcomes. To date there have been no such trials addressing youth AOD treatment retention specifically focusing on these variables. Such a trial would have national and international relevance and play a major role in clarifying the factors associated with treatment retention for youth and, by association, treatment outcomes.

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APPENDIX A

THE TREATMENT SERVICES INVOLVED IN THE STUDY

Youth Speciality Service Christchurch – AOD Stream

(mainstream outpatient, n=20)

This service is one stream within an adolescent mental health regional service provided by the Canterbury District Health Board. It receives referrals from a variety of sources including justice (mainly via the youth drug court), education, health, Child, Youth and Family and a range of other social services. To be eligible for treatment, clients need to be exhibiting significant levels of substance use or difficulties associated with substance use and be 13-18 years of age.

Clinical staff comprise a multidisciplinary team of psychiatrists, clinical psychologists, psychiatric nurses and social workers. All staff are trained to conduct intake assessments. Treatment is based on a case-management model using individual, group and family therapy.

Odyssey House Christchurch Youth Day Programme

(mainstream day patient, n=15)

This regional service is based on the therapeutic community (TC) model of self-help and is designed for youth aged 12-19 years. Young people who attend the service have generally been temporarily or permanently excluded from educational or vocational settings owing to their substance use. The staff and young people work together as a community to encourage and promote positive change in order to help individuals to manage their lives more effectively. Treatment includes individual, group and family work, educational/vocational assessments, life skills development, recreational activities and medical and psychiatric assessments conducted by qualified professionals outside the service. Youth are expected to take three to four months on average to complete the treatment programme.

Odyssey House Auckland Youth Residential Programme

(mainstream residential, n=13)

This national service is also based on the TC model of self-help and employs the same principles outlined above, where the TC (staff and residents) works to assist, support and provide motivation for change. Youth eligible to participate in this programme are aged 14-17 years, have an extensive substance misuse history, have exhausted non-residential treatment options, have limited vocational or educational opportunities, have a history of criminal offending requiring supervision, experience difficulties in the family/home life, may have co-existing mental health issues as well as substance dependence and are agreeable to comply with the rules of the Odyssey House Trust. Youth are expected to take between six and nine months to complete the programme.

CADS (Community Alcohol and Drug Services Auckland) Altered High Youth Service, Auckland

(mainstream outpatient, n=6)

This regional youth AOD service covers Auckland, Counties/Manukau and Waitemata District Health Boards. It is a mobile service seeing young people at school, at home or in local CADS or Child and Adolescent Mental Health Service (CAMHS) units.

Using a resiliency and developmental framework, 'Altered High' is an engagement and youth-focused service that emphasises the formation of a trusting relationship between client and clinician as the basis for therapeutic intervention using a harm-minimisation philosophy. Young people aged 13-20 years presenting with any type of AOD concerns (regardless of severity) and mental health issues are eligible to attend this service. Referral sources include self (preferred) and a range of community, educational, health, justice and social services. Staff include a multidisciplinary team comprising a child and adolescent consultant, psychologists, psychiatric nurses, social workers and AOD, dual diagnosis and same sex attraction focus clinicians.

Tupu Alcohol and Drug Services, Auckland

(Pacific outpatient, n=9)

This regional mobile Pacific outpatient service, funded by the Waitemata District Health Board, offers a range of individual, group and family counselling for young people who have identified as Pacific and have problems with gambling and/or substance use. The service's philosophy is based on a biopsychosocial approach providing holistic and culturally supportive treatment. Screening, assessment and intervention/management of AOD issues are provided by a team of Pacific workers who work collaboratively with CADS.

Te Atea Marino, Regional Māori Alcohol and Drug Service, Auckland – Youth Stream

(Māori outpatient, n=2)

This is a youth stream within a regional kaupapa Māori AOD treatment service situated within the Waitemata District Health Board catering to young people aged 13-20 years. It provides a range of services to Māori tangata whaiora and their whanau throughout the Auckland metropolitan area. Te Atea Marino also works alongside CADS to ensure that Māori tangata whaiora needs are met. Access to Te Atea Marino is via direct referral from schools, alternative education units, whare wananga, families, adolescent mental health services, Child, Youth and Family and CADS teams.

Rongo Atea Youth Residential Drug and Alcohol Service, Hamilton

(Māori residential, n=8)

This is a kaupapa Māori youth AOD residential service. To be eligible for this programme young people must be aged 13-18 years and have a clinical diagnosis of substance dependence or severe substance abuse. Admission must be voluntary and mental health issues must be addressed and under control before admission.

Rongo Atea is an abstinence-based programme and a drug-free facility. It runs a kaupapa Māori education programme with drug and alcohol education woven throughout. The programme is approximately four months in length but individuals can stay longer depending on treatment needs

and personal circumstances. Rongo Atea is funded by the Waikato District Health Board if the young person lives within the Midland region. For those living outside this area there is a fee per night and funding must be secured before entry.

Te Waireka Kaupapa Māori Residential Programme for Rangatahi, Otane

(Māori residential, n=6)

Te Waireka is a voluntary regional kaupapa Māori AOD treatment service for rangatahi of all cultures aged 14-19 years referred from the Central Region. The service is funded by the six district health boards within the Central Region (Hawkes Bay, Hutt Valley, MidCentral, Wairarapa, Whanganui and Capital & Coast) and provides an abstinence-based, drug-free facility incorporating both Māori and Western-based clinical practices. Whanau involvement is strongly encouraged, with designated whanau days planned into the programme. The full programme is eight weeks long, comprising four stages. Referral to the programme is through district health board-funded AOD services in the Central Region.

APPENDIX B

DESCRIPTIONS OF INSTRUMENTS USED

Sociodemographic Details

Sociodemographic details were collected from all participants, including age, gender, ethnicity, sexual orientation, current living arrangements, living arrangements at treatment, educational status, criminal convictions (if any), employment status and source of income.

Mini International Neuropsychiatric Interview (M.I.N.I.) Version 5.0.0 (Sheehan, Lecrubier, Sheehan, Amorim, Janavs, Weiller et al., 1998)

The M.I.N.I is a short, structured diagnostic interview that assesses the presence of a comprehensive range of common psychiatric disorders in the DSMIV. In this study the M.I.N.I. was revised to enable current and pre-treatment mental health and substance use diagnoses to be explored. For brevity, only those Axis I disorders commonly associated with youth or substance use disorders were explored. These included major depressive disorder, panic disorder, agoraphobia, social phobia, post-traumatic stress disorder, anorexia nervosa and attention deficit hyperactivity disorder. The antisocial personality disorder section was also modified to provide a measure of conduct disorder before the age of 15 years (conduct disorder past) and in the six months prior to interview (conduct disorder current).

An elaborated substance use section was used to ascertain current (at time of interview) and pre-treatment diagnoses of substance abuse and dependence for alcohol, cannabis, inhalants, stimulants and opioids. Also explored was the use of these substances and of hallucinogens, tranquilisers and miscellaneous substances such as piperazines more than 10 times at the time of entering treatment.

Self-reported recalls of mental health and substance use symptoms at the time of entering treatment were obtained to provide a proxy measure of mental health or substance use diagnosis at treatment. This information was obtained by asking participants, after they were asked the diagnostic questions for each disorder, “Were these same things happening with your [*state particular substance or psychiatric symptoms*] when you entered treatment?”. If participants answered “yes” to this question, this was taken as a proxy measure of the presence of that particular disorder at the time of entering treatment.

Alcohol Use Disorders Identification Test (AUDIT) (Saunders, Aasland, Babor, de la Ruelle and Grant, 1993)

The AUDIT was developed by the World Health Organization as a screening tool primarily to identify harmful and hazardous drinking. It has been validated in a number of countries.

This study used the AUDIT to gather information on drinking patterns, such as frequency and quantity of use, as well as identify issues associated with drinking. There are 10 items, with response options ranging from 0 to 4, resulting in a possible total score of 40. A score of 8 or more

indicates problematic drinking that in a clinical setting should be explored further. Traditionally, the AUDIT is administered as a pen and paper test, but in this study questions were read aloud according to the interview format. Participants were shown cue cards of response options to choose from.

To gain a proxy measure of participants' AUDIT scores on entering treatment, they completed the AUDIT twice. First they were asked about their drinking in the previous six months (AUDIT current) then to recall their drinking behaviour in the six months before entering treatment. They were then asked each of the AUDIT questions for that time period (AUDIT Treatment).

Cannabis Use Disorders Identification Test (CUDIT) (Adamson and Sellman, 2003)

The CUDIT consists of the same items as the AUDIT, but participants answered questions in relation to their cannabis use in the six months before the interview.

A proxy measure of the CUDIT score at treatment was obtained using the same procedure as that used for the AUDIT proxy measure.

Addiction Treatment Retention Questionnaire (ATRQ)

This 68-item questionnaire was specifically designed for this study by the National Addiction Centre. Items were chosen based on factors that had previously been identified and investigated in the literature in relation to treatment retention and on factors that emerged through the authors' own experiences of working with young people. The aim was to gain young people's perspectives of these factors and evaluate them in association with treatment retention.

The questions covered a range of fixed client, dynamic client and programme-related variables and examined:

- The contexts of substance use, including the participants' perceptions of parental substance use when growing up, and their peers' substance use.
- Experiences with treatment, including relationships with staff and other youth, the involvement of family members and friends, perceptions of programme rules and feelings of comfort and safety in and connection to the treatment setting.
- Expectations of the programme before entry.
- Perceptions of substance use issues before treatment.
- Goals for substance use while at treatment.
- Motivation for treatment.

Each item was framed as a statement that was read aloud to participants. Participants were asked to indicate on a five-point Likert scale the extent to which they agreed or disagreed with each statement (0 to 4, strongly disagree to strongly agree). Higher scores indicated greater agreement with each of the items.

Twenty subscales were created from the 68 items, depicting four fixed client characteristics, nine dynamic client characteristics and seven programme-related variables:

- **Fixed client characteristics:** history of maternal alcohol and cannabis use, history of paternal alcohol and cannabis use, peer substance use, and experience of cravings while at treatment.
- **Dynamic client characteristics:** perceived severity of problem with substances when entered treatment, internally motivated to attend treatment, externally motivated to attend treatment, treatment goals while at treatment, treatment goals achieved, expectations that treatment would contribute to positive life outcomes, expectations that treatment would contribute to positive AOD outcomes, perceptions about importance of completing treatment, and expectations of what treatment would be like.
- **Programme-related variables:** treatment process around setting treatment goals, relationships with staff, connection to programme, the importance of fun, accessibility of treatment in terms of transportation, how well the treatment format (i.e. group/individual) worked and the involvement of friends and family in treatment.

Novelty Seeking (NS) Items from the Temperament and Character Inventory (TCI) (Cloninger, Svrakic, Przybeck, 1993)

The TCI is designed to measure an individual's temperament and character. The complete versions of the TCI measure four dimensions of temperament (novelty seeking [NS], harm avoidance, reward dependence and persistence) and three dimensions of character (cooperativeness, self-directedness and self-transcendence). For brevity purposes (the full TCI-144 takes approximately 25 minutes to administer), only the 20 NS items of the TCI-144 were asked in this study.

NS has previously been associated with both treatment retention and treatment outcomes, so was chosen as an important temperament measure in the current study. The TCI is normally administered as a pen and paper test, but in keeping with the study's interview format questions were read aloud to participants to alleviate any literacy issues. Answers were recorded by the interviewer. A total score of 20 can be achieved across all 20 items and a higher score indicates a higher degree of NS.

Barratt Impulsivity Scale (BIS) (Patton, Stanford and Barratt, 1995)

The BIS is a 30-item questionnaire that assesses impulsivity. Using a four-point Likert-type scale (rarely/never, occasionally, often, always/almost always), participants are asked to indicate how often they engaged in a range of activities such as planning tasks carefully, acting on the spur of the moment, feeling restless at lectures or talks, and being steady thinkers. Higher scores indicated higher degrees of impulsivity. Items were read aloud to participants and answers recorded by the interviewer.

Treatment Service Reviews

Treatment service reviews were used to ascertain participants' perceptions of treatment efficacy.

Participants were asked to indicate on a five-point Likert scale:

- 'How are you now compared to when you were first seen at treatment?' Response options ranged from 'a little better' to 'a lot worse'.

- How much they thought the treatment service had helped them with their problems. Response options ranged from 'not at all' to 'very much'.

To ascertain treatment efficacy for particular issues, participants were asked to respond to these two questions for each substance they reported using more than 10 times in their lives and for all mental health disorders examined. At the end of the interview the two questions were asked again to gain an overall perception of treatment efficacy.