Combining Motivational Interviewing and Cognitive Behavioural Therapy for the treatment of adolescent substance abuse: A multiple-baseline across participants study.

A thesis presented in partial fulfilment
of the requirements for the degree of
Master of Arts in Psychology, at Massey University,
Palmerston North
New Zealand

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2003

Abstract

The overall goal of the present research was to investigate whether a standardised integration of motivational interviewing (MI) and cognitive-behavioural therapy (CBT), adapted to work specifically with this population, could be effective in treating substance use disorders in New Zealand adolescents. The present study examined the efficacy of utilising a brief (eight-ten session) combined MI and CBT treatment manual (Vilke & Ronan, 2002) with three adolescent males diagnosed as having substance abuse or dependence disorders (American Psychological Society, 1994). Treatment was carried out in participants schools. A single-case, multiple-baseline across participant's experimental design was employed, with 18-day, 25-day and 30-day baselines being used. Pre-treatment, post-treatment, and follow-up assessment consisted of a diagnostic interview and a battery of measures which assessed drug and alcohol use (type, frequency, duration), related emotional, behavioural and psychological problems, level of involvement with substances, attitudes towards drugs and alcohol, problem severity, risk factors, and relapse coping skills. Weekly measures also assessed participants' readiness to change their drinking and drug use behaviour, and their perceived benefits of drinking and drug use. Participants also kept daily substance use diaries throughout baseline and treatment and for one week at ten weeks post-treatment. Participants' weekly measures and daily substance use were assessed using a multiple-baseline visual inspection. Other measures were analysed for clinical significance. Results indicated that while the intervention did not result in the participants becoming abstinent, it was successful in changing substance use behaviour, resulting in all participants reducing their cannabis use and participant 1 substantially reducing his other substance use. The intervention also increased participants' coping and relapse prevention skills, and reduced their perceived benefits of drinking and drug use. The limitations to this study and a wide range of areas that still need further investigation in relation to the treatment programme are discussed. Overall, what this research has highlighted is that the structured intervention developed for use in the present study is worthy of further research. Randomised controlled trials are now needed to determine if the programme is effective with a wider range of adolescents, and to ascertain which components of the intervention are the most critical.

Acknowledgements

First and foremost I would like to thank the three young people who allowed me to join them for a small part of their journey, and without whom there would be no thesis. It was a pleasure to get to know you, and I wish you luck and happiness as you continue your journey through life.

I would also like to acknowledge the schools, in particular the guidance counsellors, whose willing cooperation and support of this project made it possible. Thanks also to Pauline Gardiner and her team at WellTrust, for your support of this project.

Next, a great big thank-you to my supervisor, Dr. Kevin Ronan. Your clear editing, clinical supervision, belief in me and my abilities and an overall brilliant supervisory relationship made the sometimes-challenging process so much smoother!

Thanks also to the other members of the research team, Mirjana Vilke and Cara Morrison. Mirjana, without you there would be no project – thanks for letting me be a part of it! Cara, it was great to have someone to travel with on all those long car rides, and extra special thanks for your assessment efforts! I would also like to acknowledge Dr. Patrick Dulin's assistance with treatment fidelity checks.

Many of my friends supported me through this thesis research and writing time and I thank you all. A few in particular deserve special mention for many reasons, ranging from accommodation and office space, to draft editing, and helping out in emergency's! So, thank you to Kate, Andrew, Renee, Andy, and Gillian!

I would also like to thank my Mum, Jackie, for all your help editorial help, for listening to me when the going got tough, for your never-ending belief in me, and your support, love, and friendship! I would also like to thank my brothers Adam and Ben, for never letting me get too caught up in academia, and for all those interesting factual chats!

Lastly, but never least, I would like to thank Colin. Cols, I love sharing my life with you, and the last 18 months has been no exception – thanks so much for always being there, for all your technical and computing assistance, for sorting out all my emergency stresses, for listening, for hugs, for rubs, and for your unwavering love and support. You are my rock!

Dedication

This thesis is dedicated to my lovely Dad, Warwick, who would have been proud, because he always was…

I love you and miss you Dad.
Thanks for your wisdom, guidance, and unconditional love and support.
Your life was an example well set.

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CHAPTER 1: INTRODUCTION

1.1 An overview of Adolescent Substance Abuse and its Treatment

The abuse of substances by teenagers is a problem with far-reaching consequences both for individuals and society. Adolescents are a heterogeneous group of people, and it would be a mistake to characterise them solely on assumptions of shared experiences due to age and stage of life. However, taking this into account, adolescents do differ from both adults and children. It is the time of great cognitive, emotional and physical change. Though it is a period that many negotiate successfully, some adolescents need more help and support to deal with the challenges, issues and problems that occur during this time of transition. One of these challenges is substance use.

The goal of the present research is to explore the effectiveness of a standardised integration of Motivational Interviewing and cognitive-behavioural therapy (Vilke & Ronan, 2002) for adolescents who have issues and/or problems surrounding substance abuse. Research into adolescent substance abuse shows that adolescents who abuse substances suffer from distinctly different problems and have different issues to adults who abuse substances (Brown, D'Amico, McCarthy & Tapert, 2000). It is recognised that it is not appropriate to simply apply adult treatments directly to teenagers (Deas & Thomas, 2001). In comparison to the enormous body of research into the effectiveness of various interventions for adult substance abuse, the literature on adolescent substance abuse treatment is sparse. This is a situation that needs remedying, as the consequences of substance abuse can be distressing, dangerous and impairing for the teenagers who have problems in this area.

The present study seeks, through a multiple baseline across participants study, to look at the possibility of effecting change with adolescent clients through the use of a cognitive-behavioural intervention (Vilke & Ronan, 2002), adapted specifically for this population. Cognitive-behavioural interventions have been successfully used with adolescents suffering from a wide range of problems (e.g. anxiety, depression, eating disorders), and also with adults who have substance abuse, and a variety of

other, disorders. This study forms part of the pilot study for a larger group comparison intervention. Recent reviews of the literature (e.g. Cormack & Carr, 2000; Deas & Thomas, 2001) on treatment outcome for substance abuse in adolescence show that, at present, no particular type of therapy is more successful than any other. However, treatment outcome studies do show that any treatment is clearly superior to no treatment (Deas & Thomas, 2001; Waldron, Slesnick, Brody, Turner, & Peterson, 2001; Williams & Chang, 2000). This study aims to begin filling the gap in the knowledge about what works in the treatment of adolescent substance abuse, in a uniquely New Zealand setting.

The literature review that follows contains sections on the many facets of adolescent substance use and abuse, including aetiology; risk and protective factors; consequences of substance abuse in adolescence; and treatment. These areas provide the foundation for the present study. Where possible, New Zealand (NZ) specific research is reported. Also of note is that most of the substance problems reported on are alcohol or cannabis abuse, primarily because these are the two substances (after nicotine) most abused by New Zealand adolescents, and reported on most often in both overseas and New Zealand literature (Field & Casswell, 1999).

1.2 Defining Substance Abuse

'Substance abuse' in this research is used to refer to use of a substance, either alcohol or illicit substances (e.g. cannabis), that is consistent with a diagnosis of substance abuse as defined by Diagnostic and Statistical Manual of Mental Disorders (APA, 1994). This is the terminology that is commonly used and accepted in academic publications (Spooner, Mattick & Howard, 1996). 'Substance use' refers to any use of a substance, whether it is harmful or risky to the well being of the user, or others, or not, and may or may not meet diagnostic criteria for substance abuse or dependence. The term 'substance abuse' is used here, as opposed to 'substance dependence', primarily because the majority of adolescents who present for treatment have problems relating to substance abuse rather than substance dependence. However, as stated in other research into this area (Spooner et al., 1996), wherever the term 'substance abuse' is referred to, 'and/or substance dependence' would also be appropriate.

1.3 Diagnoses and Classification

The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (APA, 1994) makes no distinction between adolescent and adult substance abuse. DSM-IV lists the following criteria for a diagnosis of substance abuse (the examples given are those that relate to an adolescent population):

A. A maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by one (or more) of the following, occurring within a 12-month period:
   1. recurrent substance use resulting in a failure to fulfil major role obligations at work, school or home (e.g. substance-related absences, suspensions, or expulsions from school).
   2. recurrent substance use in situations in which it is physically hazardous (e.g. driving an automobile or operating a machine when impaired by substance use).
   3. recurrent substance-related legal problems.
   4. continued use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance (e.g. physical fights, arguments with boyfriend/girlfriend/parents about consequences of intoxication.

B. The symptoms above have never met the criteria for substance dependence for this class of substance.

Participants were also eligible for the present study if they met the criteria for substance dependence (see appendix A). Although nicotine is included as one of the substances that make a person eligible for a diagnostic classification of substance abuse, the present study did not include cigarette smoking as part of the inclusionary criteria. Although nicotine/tobacco is a commonly used, and abused, substance among teenagers, and carries its own specific harmful health consequences, the treatment of nicotine abuse and dependence is beyond the scope of this study.

1.4 Prevalence

Most New Zealand research into drinking and drug use patterns does not report rates of DSM-IV diagnoses of substance abuse. However, Horwood and Fergusson (1998) reported the prevalence of psychiatric disorders in 16-18 year old New Zealanders participating in the Christchurch Health and Development Study (*n*=1265). They found that over 40% met standard diagnostic criteria for at least one disorder, with substance abuse being the most common. Twenty-four percent of the sample met DSM-IV diagnostic criteria for substance abuse or dependence. Breaking this down, 13.8% of the sample met criteria for alcohol abuse; 5.7%, alcohol dependence; 7.1%, cannabis abuse; and 4.6%, cannabis dependence. A further 3.7% met the criteria for another form of substance abuse/dependence (excluding nicotine) (Horwood & Fergusson, 1998). Young males, in particular Maori males, revealed a particularly high prevalence of substance abuse diagnoses. The researchers do make note of the fact that the figures probably give an upper limit estimate, since some of the participants who met the criteria were not experiencing sufficient symptom severity to justify treatment (Horwood & Fergusson, 1998). In North American studies, males also consistently have a higher rate of illicit drug use than females, and also have been found to be much more likely to binge drink and be heavy drinkers (Kaplan & Sadock, 1998).

In the first study to assess prevalence of DSM-IV substance use diagnoses in adolescents in North America, Kilpatrick, Acierno, Saunders, Reisnick, Best, and Schnurr (2000) found that approximately 10% of 17 year olds in the sample (n=4023) met DSM-IV criteria for either alcohol abuse or dependence in the past year. For the total sample of 12 to 17 year olds, prevalence of alcohol and/or marijuana abuse/dependence was 4%. The most recent North American study of the prevalence of adolescent DSM-IV substance use disorders (Young, Corley, Stallings, Rhee, Crowley, & Hewitt, 2002) was carried out with a sample of 3072 adolescents in the state of Colorado. They found alcohol to be the most commonly abused substance, and 9.9% of the full sample met criteria for an alcohol abuse disorder. When it came to dependence disorders, a slightly larger proportion of the full sample met criteria for dependence on cannabis (4.3%) than on alcohol (3.5%) (Young et al., 2002).

New Zealand statistics show an escalation in drug taking and alcohol consumption for young people. The regular Alcohol Advisory Council of New Zealand 'Youth and Alcohol' Drinking Monitors indicate that the number of teenagers who engage in heavy drinking (defined as five or more glasses of alcohol on one occasion) is increasing, along with the frequency with which heavy drinking is taking place (ALAC, 2002). In 2001, 35% of young people aged 14-17 years identified themselves as heavy drinkers. The same percentage reported that they had been involved in risky drinking at least once in the last two weeks. Twelve percent of teenagers reported that they drank either 2 or 3 times a week, or almost every day (Kalafatelis & Fryer, 2001). The same Youth Drinking Monitor also found that fifty percent of the heavy drinkers were under the age of fifteen when they first began drinking.

Age of onset for cannabis use is lowering. In 1998, 52% of people who had ever tried cannabis reported that they had tried it prior to the age of 16, compared with only 40% in 1990 (Field & Casswell, 1999). A particularly relevant piece of research into the prevalence of drug use is the survey of a sample (n=3,988) of 13-17 year olds from the Wairarapa and Kapiti regions (Regional Public Health, 2000). The results showed that 13% of the youth in the Kapiti region considered themselves to be 'someone who uses cannabis now'. Nineteen percent of youth who reported having tried cannabis at some stage had tried it prior to the age of 12. The use of substances other than cannabis or alcohol is also on the increase. In comparison with statistics gathered in 1990, double the number of 15-17 year olds reported use of drugs other than alcohol, marijuana or tobacco in 1998 (from 4% in 1990 to 10% in 1998) (Field & Casswell, 1999).

In terms of gender differences, adolescent males have typically been found to have higher rates of substance abuse than females (Johnston, O'Malley, & Bachman, 1995, cited in Jenson, Howard, & Yaffe, 1998). For instance, a comprehensive survey of Christchurch substance use treatment services found that in 1988, 60% of the adolescents who entered treatment were male (Rout, cited in MacEwan, 1998). However, recent reviews of the prevalence of adolescent substance use has found that gender differences are dwindling, and male and female differences in prevalence are no longer apparent in some studies (MacEwan, 1998).

1.5 Comorbid disorders

In their research of the prevalence of psychiatric disorders in a birth cohort of young adults from the Christchurch Health and Development study, Horwood and Fergusson (1998), found that 42% of participants who met the diagnostic criteria for a DSM-IV substance abuse/dependence diagnosis, also met the criteria for at least one other disorder. As is discussed in more detail later, in the section on risk and protective factors, psychiatric disorders increase the risk for the abuse of substances (Newcomb, 1995). Additionally, adolescents who present with comorbid disorders are at a higher risk for further adverse consequences than those who present with a substance use disorder alone (Zeitlin, 1999). Some research points to the implication that the substance abuse and comorbid disorder both result from the same circumstances in which the young person operates (e.g. family and peer environments) (Fergusson & Horwood, 1997).

The disorders that are most often comorbid with substance abuse are depression, conduct disorder, attention deficit hyperactivity disorder, post-traumatic stress disorder, anxiety, schizophrenia and other psychoses (Zeitlin, 1999). All of these disorders have implications for the course of the substance abuse and may interact with, or be causative of, the substance use. For example, a youth with conduct disorder is more likely to associate with peers who use substances, or a young person with anxiety may use substances in an attempt to self-medicate (Zeitlin, 1999).

Adolescents who suffer from comorbid disorders are at much greater risk of non-response to treatment (Zeitlin, 1999). The comorbid disorder is likely to complicate the substance abuse treatment, and it is necessary to carry out a thorough assessment prior to any intervention (Zeitlin, 1999). A 'missed' comorbid disorder, in particular depression and conduct disorder, can have severe consequences (e.g. suicidality/dangerousness). It is usually not possible to successfully treat the substance use without the comorbid disorder also being treated. For example, conduct disorder is unlikely to be effectively treated with an 8-10 session cognitive-behavioural intervention, and usually requires an in-depth family therapy or multi-systemic approach (Hanish & Tolan, 2001).

1.6 Aetiology

Adolescents begin to use substances for a myriad of reasons, and entire volumes have been written attempting to explain the pathway to adolescent substance abuse (e.g. Pagliaro & Pagliaro, 1996). The literature into the possible causative factors that contribute to the development of a substance use disorder is overwhelming in volume, and a detailed examination of every factor is both unnecessary and beyond the scope of this research. However, it is clear is that there are a number of factors that have been shown to influence the development of adolescent substance abuse disorders. This section covers the predominant and empirically supported risk and protective factors. A number of developmentally based aetiological theories are also discussed in the section concerning the nature of substance abuse in adolescence.

It is important to note that these factors are not causative, in a simple antecedent-consequence way (Schulenberg, Maggs, Steinman & Zucker, 2001). Rather the greater the number of risk factors present (some more important than others), and the smaller the number of protective factors, then the greater the likelihood is of an adolescent developing a substance use diagnosis (Newcomb, 1995). The factors outlined in this section are correlational, as opposed to causative, and the way they interact with one another is not clearly understood (Jenson, et al., 1998).

Risk and Protective factors

Risk factors that influence both the initiation and escalation of drug use during adolescence can be roughly divided into three main domains: environmental/social, individual, and life events. As with all forms of mental health problems, these three domains often interact with one another to increase the likelihood of substance abuse occurring. In the last twenty years of research, over 70 risk factors have been identified as increasing the likelihood of substance use. As Swadi (1999) points out, 'almost any factor related to psychological adversity is a risk factor for substance use' (p.220). The best overall predictor of a substance abuse/dependence disorder is widely recognised as being previous use of substances (Newcomb, 1995).

Environment/Social Factors

The two main social/environmental risk factors associated with adolescent substance abuse are peer contexts and family environments. Other social/environmental risk factors that have been identified in the literature are: laws favourable to drug use; social norms that are favourable to drug use; availability of drugs; extreme economic deprivation; and neighbourhood deprivation (Beman, 1995; Hawkins, et al., 1992). The two main factors, along with other relevant risk and protective factors, will now be examined in more depth.

Peer contexts

It has long been recognised that association with substance-using peers is a risk factor for adolescent substance use (Pagliaro & Pagliaro, 1996). In fact, the peer context in which an adolescent operates has been found in some studies to be the most robust predictor of an adolescent's substance use (Hussong, 2002; Newcomb, 1995; Pagliaro & Pagliaro, 1996; Schulenberg et al., 2001). Recent studies have examined this relationship in more depth and considered the multiple dimensions of the adolescent's peer relationships (Hussong, 2002). The most powerful predictor of substance use appears to be having a best friend who uses substances. This effect is moderated by the substance use behaviour of the 'clique' (group of friends) to which the adolescent belongs. 'Cliques that used substances more than best friends, did exacerbate adolescents' risk for substance abuse associated with having a substance-involved best friend... however, cliques that used substances less than the best friend reduced risk for substance use associated with a high-risk best friend' (Hussong, 2002, p.12). Research into the characteristics of adolescents at substance abuse treatment entry (Latimer, et al., 2000), found that having non-substance using friends was a clear protective factor, and resulted in better treatment outcomes. Peer rejection and isolation/alienation from peers is also associated with increased risk (Hawkins, 1992; Swadi, 1999).

Family environments and genetic risk

Parent and sibling substance use are two of the major risk factors for substance abuse in adolescence (Beman, 1995; Latimer, Newcomb, Winters & Stinchfield, 2000; Weinberg, 2001). Children whose parents and siblings use substances are at a much greater risk of use than those whose family members do not use (Swadi,

1999). In a recent large-scale longitudinal study, parental substance use was shown to be the strongest predictor of substance use for youth less than 12 years (Kaplow, Curran, & Dodge, 2002). However, it is unclear whether it is the actual parental substance use per se that results in this risk, or rather a style of parenting, or a family environment, which results from the parent's substance use. Another way that families are thought to contribute to the risk of a substance use disorder is through some form of genetic loading (Swadi, 1999), through an inherited susceptibility to drug use and/or a psychophysiological vulnerability to drug effects (Hawkins et al., 1992; Newcomb, 1995).

Low levels of perceived parental monitoring have also been associated with increased use of both marijuana and alcohol, along with a number of other health-risk behaviours (DiClemente, Wingood, Crosby, Sionen, Cobb, Harrington, et al., 2001). Other studies have also found that lack of parental monitoring influences adolescent substance use regardless of whether parents have substance use disorders or not (Molina, Chassin, & Curran, 1994). The same study also found that non-using mothers who suffer from depression, and are therefore also less likely to parent their children effectively, did not result in an increased risk of early-onset substance use. This may indicate that the direct modelling or genetic influences, related to parental substance abuse, are the most influential factors, at least for children and younger adolescents. Other family factors identified as risk factors include poor/inconsistent family management practices, family conflict and disruption (Hawkins et al., 1992), and abuse and neglect (Spooner et al., 1996).

Individual Characteristics and Psychopathology

A number of individual personality attributes and characteristics are associated with an elevated risk of substance abuse. They include psychological and emotional factors such as anxiety and depression, both of which are thought to increase the risk of adolescent substance abuse occurring (Newcomb, 1995). Having conduct disorder and/or attention deficit hyperactivity disorder is also a risk factor (Swadi, 1999). Related to this, impulsivity and lack of connectedness to societal norms are also risk factors (Latimer et al., 2000). Additional risk factors, also related to the previous problems, include rebelliousness, academic failure, low commitment to school, and early/persistent problem behaviours (Hawkins et al., 1992).

Self-reported reasons for use

The predominant reason given for initiation of substance use is "to try something new", and the reason adolescents report for continuation of use is because they enjoy the high/buzz, to have fun, or because of boredom (Spooner, Flaherty, & Homel, 1992, cited in Spooner et al., 1996). There is some indication that these reasons become less prominent with adolescents who have developed a severe substance abuse disorder. Research with a population from a residential treatment facility in Australia reported that the rates of users who reported using to have 'fun' was less than ten percent, and the number of teenagers who used 'to forget' was above thirty percent (McKay & Buka, 1992). A recent study into cannabis use in the Wairarapa and Kapiti areas, in which 3998 youth were interviewed on their substance use, reported that the predominant reasons given for using were to 'feel good' or because they wanted to be 'spaced out/stoned' (Regional Public Health, 2000).

Life events and experiences

A factor recently found to elevate the risk of adolescent substance abuse was either observing or experiencing violence in the past year (Kilpatrick, Acierno, Saunders, Resnick, Best & Schnurr, 2000). The same study also showed that a diagnosis of Post-Traumatic Stress Disorder independently increased the risk of marijuana and hard drug use, but not of alcohol use. As mentioned earlier, there is also substantial evidence that children who have been abused or neglected are at higher risk of illicit substance use (Spooner et al., 1996).

General protective factors

It does not always follow that each risk factor has a corresponding protective factor (i.e. the absence of risk does not necessarily indicate a protective factor), although this is more often the case (e.g. lack of substance-using parents and friends) (Latimer et al., 2000). Consequently, the previous section did highlight a number of factors where the absence of which decreases risk. Looking at pre-treatment variables is another way to establish those factors which are associated with a more positive outcome –these factors are then also thought to be those which mediate the risk of substance abuse occurring. In a review of treatment outcome studies for adolescent substance abuse, Williams and Chang (2001), report a number of pre-

treatment variables that are associated with a higher likelihood of a positive outcome. They are: lower pre-treatment substance use; peer and parental support; better school attendance and functioning at school; being employed; having greater motivation for treatment; and having lower levels of psychopathology, especially conduct disorder. Other protective factors that have been reported include school connectedness, social connectedness, and goal directedness (Latimer et al., 2000).

1.7 Developmental Factors

The nature of Substance Abuse in Adolescence versus Adulthood

Studies have found many differences between adult and adolescent substance abusers. Holland and Griffin (1984, cited in Spooner et al., 1996) found that compared to adult substance abusers, adolescents who underwent treatment for substance abuse were significantly more likely to have:

- experienced problems about substance use at school or work;
- engaged in binge drinking;
- experienced family problems (e.g. violence, physical abuse or a substance-abusing family member);
- had greater levels of psychological problems;
- attempted suicide;
- been treated for emotional problems.

Various studies have also shown that adolescents tend to be less motivated than their adult counterparts to change their substance-use behaviour (Spooner et al., 1996). Whereas adults in substance abuse treatment can usually describe multiple negative consequences of their substance use, adolescents often perceive themselves to have experienced fewer overall negative consequences (De Leon & Deitch, 1985, cited in Spooner et al., 1996).

Role transition and developmental models

Adolescent substance use may be influenced by social-developmental factors unique to adolescence. Adolescence has typically been viewed as a time of turmoil and stress for all. This is thought by many researchers to be a culturally bound phenomenon. Thus, it is important to view adolescence from a developmental-contextual approach (Schulenberg, et al., 2001). Individual characteristics and sociocultural factors all influence how an adolescent copes with the changes of adolescence. Schulenberg and colleagues (2001) group the developmental transitions of adolescence into four categories: (1) fundamental changes of pubertal and cognitive development, (2) affiliative transitions (e.g. changes in relationships with peers, parents, girl/boy friends etc.), (3) achievement transitions (e.g. from primary school to high school), and (4) identity transitions (e.g. changes in self-definition), as adolescents seek to achieve autonomy.

There are a number of theoretical models that attempt to explain why adolescence is such a risky time for the development of a substance use disorder (Schulenberg et al., 2001). These models are important, because they view the development of a disorder from a developmental psychopathology perspective (Cicchetti & Rogosch, 2002). These include:

(1) Over-Load model: developmental changes are thought to overwhelm the adolescent. Substance-use behaviours become an alternative coping strategy;

(2) Developmental Mismatch model: As a result of identity transitions, the adolescent views him/herself as an independent member of society, but is thwarted in attempts to establish this independence, as they are constrained by school and parents and so use drugs as a way of achieving or demonstrating independent functioning;

(3) Increased Heterogeneity model: adolescents who have already been experiencing difficulty with transitions/adjustment as children, are thought to find it increasingly difficult to cope with the transitions of adolescence and young adulthood;

(4) Transition Catalyst model: this model views a certain amount of substance use, or other risky behaviour, as being an important component in negotiating developmental transitions (e.g. in the formation of a personal identity);

(5) Heightened Vulnerability to Chance Events model: adolescents are viewed as being at much greater likelihood of being exposed to new contexts and experiences, including drug/alcohol use situations, as they go through their developmental transitions.

These models are not viewed as exclusionary, but rather any or indeed all of the models may operate over time, or within or across different individuals in any given adolescent population. Programmes aimed at preventing the occurrence of the situations outlined in these models have proven to be successful in reducing occurrences of substance abuse in adolescent populations (Schulenberg et al., 2001). One example includes interventions based on the 'Over-load' model, which aim to increase the adolescents coping skills and stagger the transitions the adolescent faces.

Another developmental theory that is particularly pertinent is Erik Erikson's (1968) theory of the normative stages of development. The "crisis" that adolescents face is that of "identity vs. role diffusion", in which they seek to figure out 'who they are', and develop a clear picture of themselves in the world, and in relation to the world. Young people who have not successfully resolved the preceding stages will have difficulty achieving a sense of personal identity. Consequently, they may be more prone to the development of psychological problems, including substance use disorders. This period of adolescence is typically characterised by a decline in parental influence and an increase in peer influence (Bowler, 1998). It is also a time of extreme self-consciousness, characterised by phenomena such as the 'imaginary audience' (Elkind, 1967, cited in Bowler, 1998). Teenagers have an increased tendency to imagine that those around them see every flaw that they perceive in themselves. It becomes very important to be the same as peers, in order not to be singled out negatively. Peers are also often seen as an audience that is important to impress (Bowler, 1998). When it comes to risk-taking, many adolescents also believe that they are immune to tragedy, and have what is described as an 'it will never happen to me' belief (Elkind, 1967, cited in Bowler, 1998).

Another area of particular interest when using cognitive-behavioural interventions with adolescents is their level of cognitive development. Piaget's theory of cognitive development (1970) identifies adolescence as the period in which formal operational

thinking emerges (around the age of 11-12), and young people are able to think more complexly, abstractly and hypothetically (Holmbeck, Colder, Shapera, Westhoven, Kenealy, & Updegrove, 2000). Research has shown that the conceptual components of cognitive behavioural therapy (e.g. self-talk) are better understood by older children/adolescents, and that they gain more from the conceptual (versus concrete) components of cognitive-behavioural interventions than younger children do (Kendall, 1981).

'Normal' versus maladaptive substance use from a developmental perspective

Much of the literature on adolescent substance abuse has pointed out the difficulty in distinguishing between what is normal adolescent behaviour and what is 'dysfunctional behaviour that requires intervention' (Spooner et al.., 1996, p.vii). For example, it is common practice for teenage New Zealanders to drink alcohol. According to the most recent ALAC Youth and Alcohol Drinking Monitor (Kalafatelis & Fryer, 2001) between 94 and 99 % of 14-17 year olds report that they have tried alcohol 'at some stage'. Of course, as discussed, not all of these young people go on to develop a substance abuse disorder. There is even some evidence that adolescent's who simply try or briefly experiment with alcohol/drugs are better adjusted than those who remain completely abstinent (Schedler & Block, 1990, cited in Newcomb, 1995). Therefore, it is important not to pathologise all adolescent substance use. On the other hand, despite whether the use of substances is developmentally normal or not, the consequences of regular substance use, at the level required to form a diagnosis of a substance use disorder, do warrant concern. The following section discusses some of the consequences of adolescent substance use and abuse.

1.8 Consequences of substance abuse in adolescence

'New Zealand adolescents have rates of pregnancy, drug and alcohol abuse, suicide and self-harm that are among the highest in the world' (Watson, 2001, cited in ALAC, 2002, p.6). Drug and alcohol abuse, which have their own specific consequences, can also, not surprisingly, be contributing factors to these other three problem areas. This section concentrates on the adverse consequences of adolescent substance abuse. There is very little evidence to suggest that, beyond the initial 'high' experienced by the user, there are any lasting positive consequences (Newcomb, 1995). However, as stated in the previous section, most young people who experiment with alcohol/drugs in adolescence do not go on to experience any long-term adverse consequences (Schedler & Block, 1990, cited in Newcomb, 1995). The consequences of adolescent substance abuse have not been researched in nearly as much depth as the aetiology or risk and protective factors associated with its development. However, in the studies available, early and heavy use is consistently associated with a number of severe social and individual consequences (Chassin, Pitts, & Proust, 2002).

This section focuses on the psychosocial consequences. It does not cover the physiological effects of the consumption of each individual substance. However, it should be noted that each substance has specific (and complex) adverse effects on the physiology (in particular the brain) of the individual using it, and that these effects are part of the foundation of the psychosocial consequences. For example, it is the effects of alcohol on the central nervous system that results in peoples reaction times being affected, which has the consequence of intoxicated drivers having an increased risk of vehicle crashes (Doweiko, 2002).

Immediate alcohol-related consequences

Immediate consequences of substance use vary according to the substance and the circumstances in which the substance is taken. The focus of this section is the immediate consequences of alcohol use. Research carried out by the Alcohol Advisory Council of New Zealand, found that, in 2001:

'Most 14-17 year olds (78%) who had tried alcohol at some stage ... claimed to have experienced some negative outcomes as a result of their drinking. Up to half claimed that at some stage they:

- Had thrown up or vomited (52%);
- Had fallen over and/or hurt themselves (48%);
- Could not remember things or what they did (47%);
- Had seen or heard things in a confused way (47%);
- felt guilty or embarrassed, or sorry about what they did (37%);
- had got into an argument or fight (26%).'

(Kalafatelis & Fryer, 2001, p.50).

The main cause of death in young New Zealanders (33.5%) is motor vehicle accidents (Statistics New Zealand, 1997). Alcohol is a contributing factor in approximately 14.5% of fatal accidents across all ages. In the year 2000, approximately 30% of all fatally injured 15-19 year old drivers had a blood alcohol content above the legal limit for their age (New Zealand Health Information Service, 2001, cited in ALAC, 2002). In the most recent Youth Drinking Monitor, 27% of adolescents who identified themselves as 'heavy drinkers' reported that they had got a lift with a driver who had had too much to drink or drove a car themselves after they had had too much to drink (Kalafatelis & Fryer, 2001). Adolescent males are more likely than young females to be involved in vehicle crashes (Kalafatelis & Fryer, 2001).

Another serious consequence of alcohol and drug use is that it is a contributing factor to teenage pregnancy and sexually transmitted diseases. The Youth Alcohol Monitors report that in the past 5 years between 15% and 19% of heavy drinkers and 6% to 9% of light drinkers stated that they had ended up in a sexual situation that they were not happy with, as a result of drinking (ALAC, 2002). Overseas studies (e.g. Bonomo et al.., 2001, cited in ALAC, 2002; Coombs, 1997) have clearly demonstrated a correlation between drug and alcohol use and risky sexual behaviour. This includes sex without a condom, which often results in the

transmission of sexually transmitted diseases (the most life-threatening of which is HIV) and/or teenage pregnancy. This research also found that teenagers who use substances are much more likely to engage in sexual behaviour with people they would not usually choose if they were sober. A recent New Zealand study (Wharemate & Kitson, 2001, cited in ALAC, 2002) indicated that about 82% of pregnant teenage mothers drink alcohol and are potentially at risk of foetal damage. They also report that in 1999, around 3,180 children were born to teenage mothers in New Zealand with possible alcohol-related neurological defects.

Psychological and Psychosocial consequences

Current research evidence suggests that having a substance use disorder is one of the strongest risk factors for youth suicide (Beautrais, Joyce, & Mulder, 1998). Suicide is one of the top three causes of death in the 10-24 year old age group in New Zealand. Nearly 27% of all deaths of 10-24 years olds in the period 1990-1996 were from suicide (Statistics New Zealand, 1997). Substance abuse has been associated with greater frequency and repetitiveness of suicide attempts, more lethal attempts, more serious suicide attempts and higher levels of suicidal ideation (Spooner et al., 1996). It is thought that increased impulsivity (Putnins, 1995), coupled with a comorbid disorder (such as conduct disorder or depression), produce the greatest risk of suicide in adolescents with substance abuse diagnoses (Kaminer, 1992).

A relatively common adverse consequence of cannabis use is drug-induced anxiety or even panic attacks (Millman & Beeder, 1994, cited in Doweiko, 2002). However, these usually pass as the effects of the cannabis wear off. More seriously, cannabis use has also been associated with the development of schizophrenia in individuals predisposed to psychiatric disorders (Doweiko, 2002), although there is some argument as to the validity of this assertion (Phillips, Curry, Yung, Yuen, Adlard, & McGorry, 2002). Recent New Zealand research (Fergusson, Horwood, & Swain-Campbell, 2003) found that 'the development of cannabis dependence is associated with increased rates of psychotic symptoms in young people [aged 18] even when pre-existing symptoms and other background factors are taken into account' (p.15).

Another consequence of adolescent substance abuse is an impairment in psychosocial functioning - what is known as a maturational lag (Spooner et al., 1996). Many adolescents who are heavily involved in drugs and alcohol often act and feel 'grown-up' as a result of their independent substance-using lifestyle. But this is really a 'pseudo-maturity', because cognitive development is often hindered or distorted when much of the time is spent under the influence of substances. They 'do not acquire the necessary skills and abilities normally acquired in adolescence that permits them to successfully transition into adult life and competently engage in adult behaviours.' (Newcomb, 1995, p.30).

Educational/employment consequences

Drug and alcohol use, in particular cannabis abuse, affects educational attainment and employment (Fergusson & Horwood, 1997). Lynskey and Hall (2000) reviewed cross-sectional and longitudinal research into the consequences of cannabis on young people's education and concluded that adolescents who use cannabis are at much higher risk of poor educational attainment. They found that early cannabis use in particular independently increases the risk of early school leaving, even once other risk factors that predispose the use of cannabis have been accounted for. Early onset cannabis use (prior to the age of 16) has been shown to have particularly severe consequences in terms of creating a causal chain which leads to a series of social processes, including negative peer affiliations, reduced parental monitoring and early school leaving, all of which increase the likelihood of subsequent substance use, offending and unemployment (Fergusson & Horwood, 1997). The researchers do point out though, that those adolescents using cannabis were almost certainly a high-risk population already.

There is a clearly established relationship between alcohol and drug use and crime, although once again, the impossibility of differentiating between causation or simply shared antecedents for both behaviours makes it difficult to establish whether this is cause or a consequence (Spooner et al.., 1996). The fact that many abused substances are illegal means that the likelihood of contact with the judicial system is increased by their use. In a comparison study into the consequences of depression and substance use in adolescence, problems at age 21 that were unique to those

participants who had had drug abuse/dependence disorders in adolescence included a lower likelihood of post-high school education, being fired, and active drug disorders (Giaconia, Reinherz, Paradis, Hauf, & Stashwick, 2001). Finally, early and heavy substance use is associated with increased risk of a range of negative educational and employment consequences (Chassin et al.., 2002).

Health consequences

The abuse of substances leads not only to social consequences but also may directly provoke health consequences, or indirectly influence health problems through increased risky behaviours or poor health care (Aarons, Brown, Coe, Myers, Garland, Ezzet-Lofstarm etal., 1999). There is evidence that engaging in one health risk behaviour, such as binge-drinking or abusing drugs, leads to other health-compromising behaviours (Topolsi, Patrick, Edwards, Huebner, Connell, & Mount, 2001). It is unclear, however, whether the use of drugs is a causal factor or rather a behaviour that occurs concurrently with other health-risk behaviours.

In terms of direct health consequences, studies have shown that both brief and long-term substance use can lead to an increased risk of health problems, the most common of which are infectious disease, respiratory problems and trauma-related health problems (Aarons et al.., 1999). The most serious immediate health consequence is the possibility of a lethal overdose (Pagliaro & Pagliaro, 1996). While there is the possibility of a fatal overdose or poisoning from any drug (with the possible exception of marijuana) (Doweiko, 2002), the consequences of inhalant use are particularly noteworthy. Inhalant abuse occurs almost exclusively in childhood and adolescence (Doweiko, 2002). It can have severe health consequences, including kidney damage/failure, respiratory depression, permanent organic brain damage, coma, convulsions, and cardiac arrhythmias, resulting in what is known as "sudden sniffing death" (Dinwiddie, 1994). Even first-time users are at risk for fatal cardiac arrhythmia. It has been reported that approximately 100 people per year die in the United Kingdom from inhalant related cardiac arrhythmia (Meadows & Vergase, 1996, cited in Doweiko, 2002), and in the United States between 100 and 1000 deaths are directly attributable to inhalant abuse (Hartman, 1995, cited in Doweiko, 2002). In terms of less direct influences, factors such as erratic sleep, poor

personal hygiene, sub-standard nutrition and lack of compliance with medication have been found to occur more often in adolescents who abuse substances (Connie & Miller, 1994, cited in Spooner et al.., 1996).

Future drug and alcohol use consequences

The most empirically supported consequence of drug and alcohol abuse in adolescence is that it greatly increases the chances that later drug use, and all its accompanying consequences, will occur. Fergusson, Lynskey and Hall (1996), when researching the short-term consequences of early-onset cannabis use in a New Zealand birth-cohort, discovered a clear relationship between early onset cannabis use and later cannabis use. Most overseas studies into the consequences of adolescent substance abuse have confirmed these findings. These findings hold even once a variety of social, family and individual characteristics of adolescent substance abusers have been taken into account (Aarons et al.., 1999; Fergusson et al.., 1996; Giaconia et al.., 2001). The 'gateway' theory (Millman & Beeder, 1994, cited in Doweiko, 2002) suggests that use of certain substances, in particular cannabis, leads to the abuse of more destructive drugs, such as heroin. Findings here are mixed, and there is research both supporting and disputing this theory (Doweiko, 2002). However, there is clear evidence that a linear relationship exists between the level of teenage drug use and later negative consequences – the more serious the adolescent's involvement with drugs, the more at risk they are for adverse consequences later in life, across all domains of functioning (Newcomb, 1995).

Because of the nature of substance abuse in adolescence, the high prevalence of comorbidity, and the seriousness of the consequences, it is important that assessment of adolescents who abuse substances is comprehensive and thorough. The next section focuses briefly on assessment with adolescents, and then the remainder of this literature review focuses on the treatment of adolescent substance abuse.

1.9 Assessment

Reviewers of adolescent substance abuse treatment outcomes (Deas & Thomas, 2001) have commented on the lack of the use of standardised instruments that have been validated in many of the studies conducted to explore treatment approaches with adolescents. Consequently, the present study used a number of empirically validated measures that have known psychometric properties and have been used extensively in the assessment of adolescent substance use. As discussed previously, substance use is often associated with other problems (e.g. family, psychological). Therefore it is important to measure the impact of substance abuse treatment on other areas. Assessment of the adolescent's motivation and readiness to change their substance use behaviour is also recommended in the literature (Connors, Donovan, & DiClemente, 2001). It is important, when assessing and working with adolescents in clinical and research contexts, to gain a full picture in a way that pen-and-paper self-report measures do not provide. Hence, the inclusion of a structured diagnostic interview was also deemed necessary.

The majority of the measures used in the present study rely on self-report, as this is the simplest and most effective way of collecting data. In addition, the standardised instruments available all utilize this method. There has been some debate about the accuracy of self-reported data, particularly reporting of drug use (Turner, Lessler, & Gfroerer, 1992, cited in Adair, Craddock, Miller, & Turner, 1995). However, recent research by Adair and colleagues (1995) has shown that the self-report data provided by clients during treatment for substance abuse shows high levels of internal consistency and reliability over time. Importantly, recent studies have also found that adolescents are reliable reporters of alcohol and other drug involvement (e.g. Barnea, Rahav, & Teichman, 1987, cited in Myers & Brown, 1995; Winters & Stinchfield, 1995).

1.10 Treatment

An overview of adolescent substance abuse treatment

The types of interventions used to treat substance abuse in adolescents have to date been predominantly the same interventions that are used to treat adults who have substance abuse problems, or are modified versions of interventions used to treat other disorders common in adolescence. The five main outpatient treatment modalities are: family based or multi-systemic interventions; behaviour therapy; cognitive-behavioural therapy; pharmacological interventions; and twelve-step approaches (Deas & Thomas, 2001). At present, no single treatment modality has shown to be significantly more effective than any other (Muck, Zempolich, Titus, Fishman, Godley & Schwbell, 2001). However, there are some preliminary indications that certain types of therapy may be more effective for some adolescents (Williams & Chang, 2000). It is clear that all are superior to no-treatment, and all, at least initially, are effective in reducing substance use (Hser, Grella, Hubbard, Hsieh, Fletcher, Brown, et al., 2001).

The first comprehensive review of the adolescent substance abuse treatment literature was carried out by Catalano, Hawkins, Wells, Miller, and Brewer in 1991. They reported that no single treatment modality had been shown to be more effective than any other, and that all had reported success in the treatment of adolescents with substance use disorders. At that time, the very small number of treatment outcome studies (n=16) that had been carried out meant that at best the conclusions were tentative. In the past 12 years the number of methodologically sound studies has increased, although it is still small in comparison to the immense amount of outcome research in the area of adult substance abuse.

Robert Williams and Samuel Chang (2000) carried out the most comprehensive qualitative review of the literature on adolescent substance abuse treatment outcome, and found 53 treatment outcome studies that reported substance use results at post-treatment or discharge. However, the methodology of many of these studies lack quality, with very few studies (14) including control/comparison groups.

The major conclusion was that 'the majority of adolescents who enter into substance abuse treatment have significantly reduced substance usage and significant improvements in life functioning in the year subsequent to treatment' (Williams & Chang, 2001, p. 155). They found that there is preliminary evidence to suggest that behavioural or cognitive-behavioural treatment may be superior to supportive counselling or interactional group therapy, and also that family therapy may be superior to all other forms of outpatient therapy.

Deas and Thomas (2001) also reviewed treatment outcome studies for adolescent substance abuse, with a view to comparing the effectiveness of the standard treatments that are most often used in clinical practice. They only included controlled treatment comparison studies. They also concluded that, due to the small number of controlled studies, it was premature to conclude that any one modality of treatment is more effective than any other. They report that the few existing control and comparison studies would have been greatly improved by the inclusion of standardised assessment instruments validated for an adolescent population.

As discussed, the literature into adolescent substance abuse treatment seems to demonstrate an increase in effectiveness when family involvement is incorporated into the treatment. Family-based and/or multi-systemic interventions have received the most attention by researchers into the effectiveness of interventions for adolescent substance abuse (Cormack & Carr, 2000; Target & Fonagy, 1996; Weinberg, Rahdert, Colliver & Glantz, 1998). Other modalities, including cognitive-behavioural therapy and motivational interviewing, have received much less attention. Although it may well turn out to be the ideal, incorporating the adolescent's family into treatment is not always feasible. For example, young people whose abuse is not severe enough to have come to the attention of their family are often unwilling to have their family informed (personal communication with four school guidance counsellors, 2003). Also, adolescents who have been declared legally independent, or who have parents that are unable or unwilling to partake in family therapy, still require the best possible treatment available to them. Consequently, it is important that individual modalities of treatment continue to receive attention.

Treating substance abuse successfully

As there have been relatively few studies into the treatment of adolescent substance abuse, it may be instructive to draw on the adult substance abuse literature when considering the treatment of adolescent substance abuse. The other important avenue to look at is the interventions for problems related to substance use that have been empirically validated with adolescent populations.

Two types of interventions form the basis for the current intervention: Cognitive-Behavioural Therapy and Motivational Interviewing. Both of these interventions have demonstrated effectiveness in the treatment of adult substance abuse (e.g. Miller & Rollnick, 2002; Monti, Colby, & O'Leary, 2001), and show preliminary evidence of success with adolescents (e.g. Dennis, 2002; Kaminer & Burleson, 1999). The following sections outline the foundations of these two interventions and their effectiveness to date with both adult and adolescent populations. Although both of the interventions can be used in inpatient or outpatient settings, the focus of the present research is on an outpatient intervention. This also represents the focus of the present review.

Cognitive-Behavioural Therapy

Cognitive-behavioural therapy (CBT) is a combination of the traditions of behaviour therapy (Bandura, 1986) and cognitive therapy (Beck, 1995; Beck, Wright, Newman, & Liese, 1993). 'Cognitive behavioural therapy involves the application of specific, empirically supported strategies focused on [changing] maladaptive thinking and behaviour' (McGinn & Sanderson, 2001, p.28). CBT is widely used in the treatment of many adult disorders, and hundreds of studies have demonstrated its effectiveness in the treatment of a variety of psychological disorders (e.g. depression; anxiety disorders; eating disorders), including the treatment of substance abuse and dependence (Hollon & Beck, 1994). Alongside its efficacy in the treatment of adult disorders, cognitive-behavioural therapy has been successfully applied to a wide range of disorders with both children and adolescents (e.g. Kendall, Marrs, & Chu, 1998). CBT is effective in the treatment of anxiety and depression in childhood and adolescence (Kazdin & Weisz, 1998). CBT has also

been proven to be superior to relationship therapy with children and adolescents who exhibit aggression and antisocial behaviour (Kendall, Marrs, & Chu, 1998).

The majority of cognitive-behavioural treatments for children and adolescents incorporate a variety of operant and classical procedures. These include behavioural components such as modelling and role-play, and cognitive components such as problem solving (which aims to work with cognitive deficits) and cognitive restructuring (which aims to work with cognitive distortions) (Kendall, et al., 1998). There is some evidence that the effectiveness of CBT with children and adolescents is affected by the client's cognitive developmental level (Durlak, Furhman, & Lampman, 1991). Durlak et al.'s (1991) review demonstrated that CBT for older children (aged 11-13) had a much larger treatment effect size compared to younger children. Consequently, as discussed briefly earlier, adolescents may receive more benefit from cognitive-behavioural treatment compared to younger children (Ronan & Kendall, 1990).

Major components

The two critical components of cognitive-behavioural therapy for substance use are functional analysis and skills training. Functional analysis involves assessing the antecedents (triggers) of the substance using episodes and also assessing the consequences of these episodes. These antecedents and consequences are examined from both a cognitive perspective (e.g. "What were you thinking? How were you feeling?"), and a behavioural perspective (e.g. "Where were you? What were you doing before hand? What happened next?") (Vilke & Ronan, 2002). Skills training involves the development of new skills, or the re-acquiring of previously learnt, but forgotten, skills. This enables the person to cope with the problems and situations they face, without resorting to drug or alcohol use. Usually the skills taught are both intrapersonal (e.g. coping with cravings) and interpersonal (e.g. refusal skills) (Carroll, 1998). They are designed to be both problem-specific and able to be generalised, and are based on individual client needs. Modelling, behaviour rehearsal, feedback, and homework assignments are characteristic techniques (Waldron, 1998).

Coping and social skills training (CSST) have been the core aspects of cognitive-behavioural interventions for alcohol problems for over thirty years (Monti, Abrams, Kadden, & Cooney, 1989; Monti, Kadden, Rohsenow, Cooney, & Abrams, 2002; Rohsenow, Monti, Martin, Michalec, & Abrams, 2000). CSST is one of the most empirically supported psychological treatments for alcohol abuse and dependence. It was the type of cognitive-behavioural therapy used, and proved to be effective, in Project MATCH (NIAAA, 1995). It is also currently being used in another multi-site study, Project Combine, which is funded by the American National Institute in Alcohol Abuse and Alcoholism (NIAAA) (O'Leary & Monti, 2002).

Cognitive-behavioural therapy is a collaborative, individualized, goal-focused approach to the treatment of substance abuse. CBT assumes that an important factor in the development and continuation of substance abuse is that the person using the substance has learnt to do so, through modelling, operant conditioning and classical conditioning (Carroll, 1998). Carroll (1998) states that in the simplest sense cognitive-behavioural therapy attempts to help clients recognise those situations in which they are most likely to use substances, avoid those situations when appropriate, and cope more effectively with situations, problems and problem behaviours associated with the substance use.

Cognitive-Behavioural Therapy for substance abuse with adults

Cognitive-behavioural therapy has been widely used to successfully treat adult substance use disorders, including alcohol use disorders (O'Leary & Monti, 2002), cannabis dependence (Copeland, Swift, Roffman, & Stephens, 2001), cocaine dependence (Carroll, 1998) and other types of substance abuse/dependence (Carroll, 1996). Even competing approaches such as 12-step and psychodynamic approaches now recognise the value of CBT techniques and have proposed methods to incorporate CBT techniques into their treatment modalities (e.g. Keller, 1996, cited in Morgenstern & Longabaugh, 2000). CBT is clearly effective in reducing substance use and maintaining change post-treatment compared to no treatment. The evidence is less clear in terms of its efficacy in comparison to other treatment modalities.

Some studies have shown that cognitive behavioural therapy for substance abuse is superior to other forms of treatment. For example, a review of Individual-Focused Strategies to reduce problematic alcohol consumption by university students (Larimer & Cronce, 2002), found that cognitive-behavioural skills based interventions and brief motivational interventions were consistently more efficacious than information-based interventions. However, the results from project MATCH (NIAAA, 1995), the largest multi-site treatment outcome study carried out in North America, compared Motivational Enhancement Therapy (MET), 12-step programmes, and cognitive-behavioural therapy, and found that all three treatments were effective and comparable in terms of reducing alcohol use and associated problems (Project MATCH research group, 1997).

Cognitive-Behavioural Therapy with adolescents

As mentioned in the overview of treatment outcome literature, cognitive-behavioural interventions with substance-abusing adolescents have demonstrated effectiveness in reducing substance use, and maintaining change post-treatment (Waldron, et al., 2001). The most recent study of adolescent cannabis abuse treatment, the Cannabis Youth Treatment (CYT) project (Dennis, 2002), comparing five outpatient treatments for adolescent marijuana abuse, recently released its preliminary findings. It found that a combination of motivational interviewing and cognitive-behavioural therapy resulted in significant decreases in cannabis use and associated problems. In fact, in this particular study, CBT produced outcomes, at six months post-treatment, equal to the results achieved by multidimensional family therapy or a community reinforcement approach (Dennis, 2002).

Cognitive-behavioural therapy has also been found to be superior to some other forms of outpatient therapy (Kaminer, Burleson, Blitz, Sussamen, & Rounsaville, 1998). Azrin and colleagues (Azrin, Donohue, Besalel, Kogan, & Acierno, 1994) compared 15 sessions of behavioural treatment (an important component of cognitive-behavioural therapy) to 15 sessions of supportive counselling. At post-treatment, 73% of those who had received the behavioural intervention were abstinent, compared to only 9% of those who had received supportive counselling

Azrin et al., 1994). Kaminer and colleagues (1998) compared two-three weeks of inpatient treatment followed by 12 weeks of outpatient cognitive-behavioural treatment, with two-three weeks of inpatient treatment followed by 12 weeks of outpatient interactional group therapy. Although the sample was small (n=32), they found that cognitive-behavioural treatment produced significantly better results in terms of substance use reduction at a three-month follow-up (Kaminer et al., 1998), although at a fifteen month follow-up no significant treatment group differences were observed (Kaminer & Burleson, 1999). Kaminer, Burleson and Jadamec (1999) have also researched the effectiveness of CBT versus Psycho-educational therapy (PET) for adolescents. At a three month follow-up a trend towards improvement on the drug and alcohol severity measures was observed for adolescents treated in CBT relative to those in PET. In a recent investigation with a slightly larger sample size (n=88), CBT participants exhibited significantly lower rates of positive urinalysis than did PET subjects for older youth and male subjects at a 3-month follow-up evaluation (Kaminer, Burleson, & Goldberger, 2002).

There are a number of reasons why cognitive-behavioural therapy for substance abuse may be particularly suited to adolescent populations. First, it is individualised and emphasises a collaborative approach, allowing the clients to select their own goals. This is likely to suit the strong need for autonomy and independent development that characterises this period of transition. Second, it has an emphasis on behavioural components. It uses concrete examples that are based on the client's own behaviour and pattern of substance abuse. The cognitive-behavioural intervention used in the present study teaches one specific skill in each session, incorporates role-playing, and assigns inter-session homework. All these may allow young people to be able learn new skills more effectively (O'Leary & Monti, 2002). The focus of the present research is on the effectiveness of a blend of cognitive-behavioural therapy with another empirically supported intervention for substance abuse – Motivational Interviewing.

Motivational Interviewing

Motivational Interviewing is a style of therapy used predominantly with people who have substance use disorders. William Miller and Stephen Rollnick developed this

approach and it has been widely researched and used with adults who have substance abuse/dependence problems since its inception in the 1980's (Miller & Rollnick, 1991). More recently it has been applied to all areas of behaviour change (Miller, 1996; Miller & Rollnick, 2002). It is aimed at helping people resolve their ambivalence and move along the path to change. It is particularly useful for people who are reluctant to change and/or ambivalent about changing their drug or alcohol use behaviour. Miller & Rollnick have based their ideas around Prochaska and DiClemente's transtheoretical model of change (1982). Prochaska and DiClemente have developed a model which describes the stages that people pass through in the course of changing behaviour: pre-contemplation; contemplation; preparation/determination; action; maintenance; (and sometimes) relapse. People may move through this process of change many times prior to making a permanent exit from the cycle (see Figure 1), and may at any time be in different stages of change for different behaviours (Connors, et al., 2001). For example, an individual may be at the action stage for their use of cannabis, but at the same time be in pre-contemplation for their use of cigarettes. The Stages of Change model has been applied to adolescents and found to operate in the same way with them as it does with adults (Pallonen, 1998, cited in Muck et al., 2001).

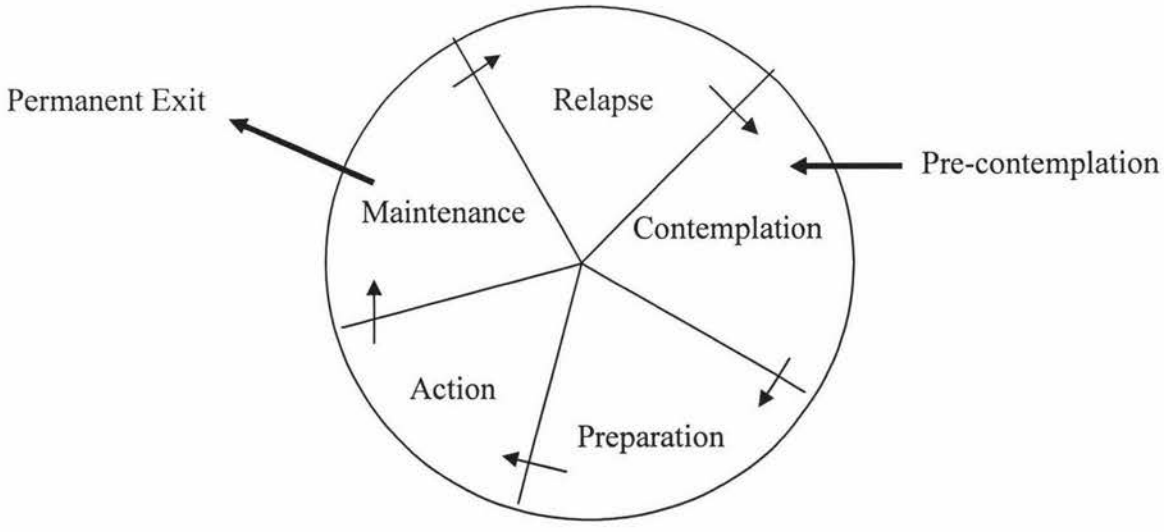

Figure 1. **Basic Stages of Change Model** (Prochaska & DiClemente, 1982; Prochaska & DiClemente, 1992; DiClemente & Prochaska, 1998)

Most therapies assume that people who are coming for drug and alcohol treatment are at the preparation or action stages, and that the clients are ready to make a change (Miller & Rollnick, 1991). However, this is not necessarily so, especially in the case of adolescents, who may have felt coerced into coming along to treatment by either the school or their parents or caregivers. As discussed earlier, adolescents are less likely than their adult counterparts to be committed to changing their substance-abusing lifestyle (Spooner et al., 1996). Research supports the clinical observations often made by those working with this population, that adolescent drug abusers as a whole are less motivated to change or ready for treatment than adults (Melnick, De Leon, Hawke, Jainchill, & Kressel, 1997).

Motivational Interviewing uses a style of being with a client, coupled with specific techniques, to enhance clients' motivation for change, and move them from pre-contemplation, or contemplation, into the determination and action stages (Handmaker & Walters, 2002). In motivational interviewing, the therapist does not adopt an authoritarian "I am the expert" role. Responsibility and choice are explicitly left with the individual.

Major components

There are four broad clinical principles that underlie motivational interviewing (Miller & Rollnick, 2002): (1) express empathy, (2) develop discrepancy, (3) roll with resistance, and (4) support self-efficacy. Another tenet of motivational interviewing is that the therapist avoids arguing with the client (Miller & Rollnick, 1991). There are a number of specific techniques used to enhance intrinsic motivation for change and to deal with resistance (Miller, Rollnick, & Moyers, 1998). The most basic techniques are (1) asking open questions, (2) listening reflectively, (3) affirming, (4) summarizing, and (5) eliciting change talk (Miller & Rollnick, 2002).

Motivational interviewing is rarely used in its 'pure' form, and is often adapted for use with other interventions, with the motivational interviewing 'style' retained (Bishop, 2002). Motivational interviewing and other types of therapy based on it (e.g. motivational enhancement) have been shown to be effective with alcohol-involved adolescent populations (Monti, Barnett, O'Leary, & Colby, 2001). The effectiveness of Motivational Interviewing has been demonstrated both as a stand-alone treatment

and as prelude to cognitive-behavioural treatment (Monti, Colby, Barnett, Spirito, Rohsenow, Myers, et al., 1999). The use of motivational interviewing prior to treatment, with adolescents presenting for outpatient treatment of substance abuse, was shown to result in significantly better treatment engagement and outcome (measured by decrease in substance use) when compared with a condition that did not include motivational interviewing prior to beginning treatment (Aubrey, 1998).

Combining Motivational Interviewing with Cognitive-Behavioural Therapy

Motivational interviewing blends naturally into a cognitive-behavioural approach (Miller, et al., 1998). The non-authoritarian stance of motivational interviewing may also be particularly suited when used in conjunction with CBT for adolescents, as it helps to build the collaborative partnership necessary for effective cognitive-behavioural therapy (van Bilsen & Wilke, 1998). As motivation for change is strengthened, the focus shifts to negotiating a treatment plan, and the individualised and self-chosen goals of the client are addressed within the cognitive-behavioural intervention (Waldron & Flicker, 2002).

As mentioned earlier, Aubrey (1998) found that the addition of a motivational interview prior to inpatient substance abuse treatment with adolescents resulted in increased retention in treatment (an average of 17 sessions versus 6 sessions), and fewer days of alcohol use following treatment. As discussed previously, another recent study involving a combination of Motivational Interviewing and CBT with adolescents has also shown positive results. The large (n=600) multi-site Cannabis Youth Treatment (CYT) project (Dennis, 2002), reported at six-month follow-up, that the combined treatment of two motivational enhancement therapy sessions followed by three cognitive behavioural therapy sessions (MET/CBT5) resulted in a similar percentage of youth reporting abstinence and no symptoms compared to groups who participated in multidimensional family therapy or an adolescent community reinforcement approach. The present study combined one session of motivational interviewing with seven sessions of cognitive-behavioural therapy.

A major problem when working with adolescents who have substance abuse disorders is treatment non-completion (Spooner et al., 1996). Additionally, relapse

rates are also high (Hser, et al., 2001). The present treatment intervention seeks to minimise attrition and prevent relapse through adapting the intervention for use specifically with adolescents, and using a combination of motivational interviewing and cognitive behavioural therapy. The following sections outline the research on attrition and relapse and the effect that these have on treatment outcome.

Attrition

Relapse and attrition rates are high in treatment outcome studies, as well as treatment in general, of both adult and adolescent substance abuse (Spooner et al., 1996). For example, in the large Drug Abuse Treatment Outcome Studies for Adolescents (DATOS-A) project, using data from 23 community-based treatment programmes, only 27.1% of the 1167 adolescents in outpatient programmes stayed in treatment for the recommended optimally beneficial time period of 90 days (Hser et al., 2001).

Research has failed to provide any reliable pre-entry treatment variables that can effectively predict retention (Spooner et al., 1996). Preliminary research suggests that motivation and readiness to change the substance abuse behaviour may be key predictors. In particular, Melnick and colleagues (1997) researched the motivation and readiness of 1000 adolescents and 1400 adults entering treatment facilities and found that adolescents entering substance abuse treatment were less likely to be motivated to change compared to their adult counterparts (Melnick, et al., 1997). The same study also showed that scores on an instrument measuring circumstances, motivation, readiness and suitability for treatment were the largest and most consistent predictors of retention in inpatient substance abuse treatment for both the adults and adolescents. In turn, retention in a programme is also one of the best predictors of a positive outcome to treatment (Williams & Chang, 2000). Therefore it makes sense to assess readiness for change and also motivation when working with substance abusing populations. Additionally, it makes sense to incorporate known effective strategies for enhancing the motivation of adolescents who enter into substance abuse treatment. This was done in the present study in order to retain as many individuals in treatment as possible, therefore ensuring them the maximum benefit.

Another predictor of retention in treatment is the adolescent's engagement with the therapy and indeed, the therapist (Newman, 1998; Roth & Fonagy, 1996). Sometimes the engagement with therapy may not occur because the adolescent is unmotivated to change their behaviour. However, sometimes the engagement may not occur because the therapy itself is unsuited to the adolescent. As discussed earlier, it is not always appropriate to simply use adult treatments with adolescents without modifying them for use with this population. One of the key reasons for this may be that an adult intervention, while theoretically sound, does not engage the adolescent at their level. The therapist may be attempting to treat the adolescent as 'young adult', and may not have taken into account the social and developmental factors. The next section discusses ways that therapy with adolescents can be carried out that minimise the risk of treatment non-completion and encourage retention. This is then followed by a discussion of relapse prevention techniques incorporated into the present study's treatment programme.

Adapting interventions for use with adolescents

A number of fundamental 'ground rules' have been suggested for carrying out cognitive-behavioural therapy with adolescents (van Bilsen & Wilke, 1998; Wilkes, Belsher, Rush, & Frank, 1994). They include acknowledgement of the adolescent's focus on himself or herself, and recognition of this as being developmentally appropriate. This involves strategies such as acknowledging the adolescent's desire for self-determination through offering them a choice of homework activities, adopting a non-judgmental/non-confrontational approach, and retaining an awareness that 'all or nothing' dichotomous thinking is a common feature of the adolescent world view. It is also particularly important to create an atmosphere of collaboration. This is a central component of CBT with any age group but is particularly relevant with adolescents. Adolescents sometimes enter therapy with the perception they are in a 'one-down' position relative to the therapist (van Bilsen & Wilke, 1998), and may also have been coerced into coming to therapy in the first place. Given these features, cognitive-behavioural therapy with non-self controlled adolescents (Ronan & Kendall, 1990) emphasises that the therapist must fulfil the role of a collaborative consultant, actively pursuing engagement with the adolescent

client, taking into account such features as formal operational thinking, the imaginary audience, and other social and developmental factors.

Language use is often highly idiosyncratic during adolescence. CBT with adolescents focuses on specific and concrete meanings of ideas and words, and does not assume that the meaning of words or abstract concepts is the same for adolescents as it is for adults. Therapists explicitly help adolescents express what they mean through the use of questions such as "How would you know...?", "How would someone else be able to tell...?" (van Bilsen & Wilke, 1998). An effective exploration of cognitive deficits or distortions is only possible with a shared understanding between the client and therapist. Use of age-appropriate materials is also recommended (Kendall & Panichelli-Mindel, 1995). Supporting materials that appeal to adolescents, such as cartoons, interactive worksheets, or computer-based recording of thought records or functional analyses, means that the therapeutic interaction is engaging and developmentally sensitive.

Relapse Prevention

Treatment is clearly superior to no treatment in the reduction of substance abusing behaviour with adolescents who complete treatment (Williams & Chang, 2000), but relapse rates are still high in this area. Research into relapse rates with adolescents who receive substance abuse treatment shows that, although there is usually a reduction in use during treatment, a large proportion of youth return to drug and alcohol use (Hser et al., 2001). In fact, fifty percent of adolescents who are admitted to inpatient treatment programmes return to their pre-treatment level of substance use within 90 days of discharge (Latimer, et al., 2000). The Williams and Chang review (2000) found that only a minority of adolescents receiving outpatient treatment actually achieve abstinence by treatment completion (39-40%). However, when the studies that reported the percentage of adolescents with reduced substance use post-treatment were reviewed, it was reported that, on average, substance use decreased to approximately 50% (range = 38%-62%) of pre-treatment levels (Williams & Chang, 2000). Of those adolescents who do achieve abstinence during treatment, a rapid relapse to drug use (within approximately 2

months of treatment completion), is the norm (Cornelius, Maistro, Pollock, Martin, Salloum, Lynch, et al., 2003).

Relapse prevention has long been regarded as an important facet of substance abuse treatment (Marlatt & Gordon, 1985). As discussed earlier, teenagers face different social and developmental issues from adults and may use alcohol and drugs for different reasons. Alongside, there is growing evidence that adult models of relapse may not be applicable to adolescents (Myers & Brown, 1995). For example, studies of relapse rates in adolescents' show that adolescent relapses tend to be triggered by social pressure, whereas adult relapses tend to be triggered by negative emotional states (Myers & Brown, 1990, cited in Spooner et al., 1996). Interestingly, unlike adult substance abusers, for whom relapse is much more likely if they enter treatment with a high level of problem severity, pre-treatment level of abuse does not predict outcome or relapse rates within the first six months post-treatment for adolescents (Latimer et al., 2000). Relapse prevention as a specific focus of therapy has received considerable attention owing to the work of Marlatt and colleagues (1985).

A clear goal of cognitive-behaviour therapy with substance-abusing clients is to build up the person's coping and life skills. Strategies are used that enhance generalization, prevent relapse, and 'empower [clients] by providing them with skills they can use outside therapy' (McGinn & Sanderson, 2001, p.23). CBT emphasises building the skills necessary to manage "real life" events and cope in high-risk situations that can lead to relapse (O'Leary & Monti, 2002). The intervention used in the present study is individualised, and high-risk situations specific to each adolescent are addressed during treatment. As discussed, combining motivational interviewing with cognitive-behavioural therapy is an additional way of preventing relapse, and also an important way of building motivation and retention in treatment (Aubrey, 1998). Another way of increasing retention in treatment is to use a brief therapy approach. The following section outlines the tenets of brief therapy and their application to the present study.

Brief Therapy

In recent years, there has been an increased emphasis on brief therapy (less than ten sessions) across all realms of psychotherapy (Koss & Shiang, 1994). There are many reasons for this focus on brief modalities of treatment. The first of these is that people coming to therapy generally do so with specific goals in mind, and seek a brief treatment. The average duration of treatment, regardless of the therapeutic orientation of the therapist, has been shown to be six to eight sessions (Garfield, 1986, cited in Koss & Shiang, 1994). Therefore it makes sense to develop treatments that will give the greatest symptom reduction and problem resolution within this time frame, particularly given the finding that maximal change tends to happen in the first 8-10 sessions, a factor known as the dose effect (Howard, Kopta, Krause, & Orlinsky, 1986). Reduction in the time required for successful therapeutic interventions also has benefits in terms of reduced costs. This in turn has pragmatic benefits in terms of managed health care, and it also makes treatment accessible to more individuals (Hazlett-Stevens & Craske, 2002). Additionally, given the high treatment non-completion rate found when working with adolescent clients (Kazdin, 1994), it makes sense to develop treatments that will produce positive results quickly, in order to reach as many young people as possible within their time in treatment.

Within the field of substance abuse treatment there is an increased awareness that longer interventions are sometimes no more effective than shorter ones (Bishop, 2002). For example, the Project MATCH research group (1997) found that the four-session motivational enhancement therapy intervention was equally as effective for the treatment of alcohol problems as the longer cognitive behavioural and 12-step approaches. This has been shown to be the case in a number of other studies also (e.g. The Marijuana Treatment Project, Kadden et al., 2000, cited in Bishop, 2002). However, some studies have shown that extended interventions may necessary for clients who have more severe, and often overlapping, problems alongside their substance use diagnosis (Zweben & Fleming, 1999, cited in Bishop, 2002).

Both motivational interviewing and cognitive-behavioural interventions are particularly suited to brief therapy modalities. Cognitive-behavioural treatments are

typically brief and time-limited and many lead to significant clinical improvement and symptom reduction in ten to twenty sessions (Hazlett-Stevens & Craske, 2002). In fact, standard CBT for substance abuse is provided over approximately twelve sessions (Longabaugh & Morgenstern, 1999). Treatment researchers are now working to 'streamline existing effective cognitive behavioural therapies to make them even more efficient, cost-effective and affordable' (Hazlett-Stevens & Craske, 2002, p.3). While many brief motivational interviewing based interventions for substance abuse have been developed and have demonstrated effectiveness (e.g. Project MATCH research group, 1997), most brief treatments for substance abuse do not include cognitive-behavioural components (Hazlett-Stevens & Craske, 2002). However, Sobell and Sobell have abbreviated CBT for adult problem drinking, which they have demonstrated to be effective in as little as two sessions (Sobell & Sobell, 1993, cited in Hazlett-Stevens & Craske, 2002). The present study used eight to ten sessions of a structured session-by-session approach.

Manualised therapy for substance abuse

The use of treatment manuals is highly recommended in treatment outcome research (Chambless & Hollon, 1998), and they are particularly becoming the norm in the field of cognitive-behavioural therapy. Fifty-six percent of all the cognitive-behavioural treatment outcome studies conducted with adolescents between 1990 and 1998 used treatment manuals (Holmbeck et al., 2000). Treatment manuals may consist of detailed session-by-session outlines of therapy or may describe in a broader structure the phases and principles of the treatment. Fundamentally, manuals are guidelines that describe treatment procedures and therapeutic strategies, and sometimes also provide an underlying theory of change on which the techniques are based (Ollendick & King, 2000).

The use of treatment manuals is important in establishing the efficacy of a treatment intervention for a number of reasons. First, a treatment manual provides an 'operational definition' of the treatment. It gives a description of the treatment that makes it possible to check whether treatment was actually delivered as intended (Ollendick & King, 2000). Second, treatment manuals are an excellent way of disseminating the exact components of a treatment to other mental health

practitioners, which enables a more accurate replication for both further research and clinical applications (Chambless & Hollon, 1998). Third, they also provide a means of promoting the integrity of treatment over the course of its delivery (by specifying the essential aspects of a treatment) and of differentiating a specific treatment from other approaches (Carroll, 1997).

Recent research into therapists' reactions to manual-guided therapies for the treatment of adolescent marijuana abuse found that therapists reported that manuals provided structure and consistency to their therapeutic work (Godley, White, Diamond, Passetti, & Titus, 2001). The study also found that the therapists were able to address individual needs, and be flexible and client-centred, within the manual-driven treatment sessions (Godley et al., 2001). Additionally, the good outcomes associated with the three manual-based treatment approaches in Project MATCH (Project MATCH Research Group, 1997) underline the flexibility and effectiveness of manual-guided therapies for the highly heterogeneous groups of people with substance abuse and dependence disorders (Carroll, 1997).

A number of treatment manuals exist in the area of substance abuse treatment (e.g. Carroll, 1998; Godley et al., 2001; Monti, et al., 1989). The treatment manual used in the present study is an adaptation of Carroll's (1998) and Monti and colleagues' (1989) brief cognitive-behavioural interventions for substance abusing clients. Carroll (1996) developed and researched the efficacy and effectiveness of a 12-session manual-based treatment with individuals diagnosed with either cocaine abuse or dependence, in an outpatient setting. Carroll, Rounsaville, and Gawin (1991) compared the effectiveness of the manual to Interpersonal Therapy and found that cocaine abusing participants randomly assigned to CBT were more likely to 'complete treatment (67% versus 38%), attain 3 or more continuous weeks of abstinence (57% versus 33%), and be continuously abstinent for 4 or more weeks when they left treatment (43% versus 19%)' (Carroll, 1998, p.116). Additional research also found that substance abusers with more severe dependence symptoms stayed longer in treatment and attained longer periods of abstinence when treated with CBT compared with those treated with interpersonal therapy (Carroll, Rounsaville & Gawin, 1991) or clinical management (Carroll, Rounsaville, Gordon, Nich, Jatlow, Bisighini, et al., 1994).

Many of the skill-related sessions in the Carroll manual are adapted from Monti et al.'s (1989) coping skills training guide designed for treating alcohol dependence (and dependence on other substances). Monti and colleagues training guide outlines twenty-five coping skills training sessions (both intrapersonal and interpersonal) for use with groups of substance-dependent adults. The sessions on substance refusal skills, seemingly irrelevant decisions and problem solving have been adapted from this material. As discussed previously, coping and social skills training (CSST) is one of the most empirically supported cognitive behavioural interventions for substance abuse (Monti et al., 2002), and is also a fundamental component of relapse prevention.

The overall goals of Carroll and Monti's manualised programmes are:

- Functional analysis of episodes of substance use. Functional analysis is used to identify the client's thoughts, feelings and circumstances before and after substance use. This plays a critical role in helping the therapist and the client determine the reasons that the client uses substances, their maladaptive thoughts surrounding substance use, and the high-risk situations that are likely to be problematic for that individual.
- Skills Training. Individualised skills training based on client need, including problem solving skills, coping skills and refusal skills. Carroll's manual includes eight skill topics, with the option of providing each in a two-session format.

Carroll identifies five critical tasks that are essential to successful cognitive-behavioural substance abuse treatment (Carroll, 1998). They are: (1) foster the motivation for abstinence, (2) teach coping skills, (3) change reinforcement contingencies, (4) foster management and regulation of painful affect, and (5) improve interpersonal functioning and enhance social supports. The manual used in the present study is based on Carroll's and Monti's manuals, and incorporates all of these critical tasks.

1.11 The Present Study

The present study is intended to examine the efficacy of a brief (eight-ten session) cognitive-behavioural intervention for adolescents diagnosed as having substance abuse or dependence disorders (APA, 1994). As stated previously, the intervention used in the current study is an adaptation of Carroll's (1998) and Monti et al.'s (1989) brief cognitive-behavioural interventions, with adaptations made specifically for an adolescent population. Instead of an exclusive focus on cocaine or alcohol as the substance of abuse, the treatment manual in the present study allows for the treatment to be specifically tailored to the individual substance abused by the adolescent, or can be used to address poly-substance abuse.

The treatment manual involves use of motivational interviewing (Miller & Rollnick, 2002) in the first session, and a motivational interviewing style throughout the whole treatment (Vilke & Ronan, 2002). The present manual reduced the number of sessions to eight, retaining the option of a double session for two of the skills based sessions (Session Two: coping with cravings, and Session Six: problem-solving and seemingly irrelevant decisions - see methods section), based on client need. Strategies used involve functional analyses of substance use situations, automatic thought records, skills for coping with cravings, goal setting, refusal skills, problem solving skills, recognition of seemingly irrelevant decisions, and formulating an all-purpose coping plan (Vilke & Ronan, 2002). The supporting examples and materials have all been adapted for use with adolescent clients.

Goals of the present study

The present thesis forms the pilot study for a group comparison intervention. It aims to assess whether a standardised integration of motivational interviewing and cognitive-behavioural therapy, in a structured brief therapy format, could be effective in treating substance use disorders in adolescence. The overall goal of the present study was to evaluate the efficacy of this standardised treatment intervention with three adolescents. A single-case, multiple-baseline across participants' experimental design was employed. The adolescents received eight to ten sessions, typically

twice weekly (Mondays and Thursdays), for approximately one hour, with variations made for illness and school holidays.

It was hypothesised that after participating in the programme, the adolescents would all demonstrate decreased levels of substance use, accompanied by a reduction in the problems associated with that use. It was also hypothesised that this reduction in use would only occur during and after the treatment intervention, and not during varying lengths of baseline assessment. Furthermore, it was predicted that the number of benefits the participants perceived drinking and drug use to have would also decrease throughout the course of the intervention. Additionally, it was predicted that, throughout the course of treatment, the participants would move from pre-contemplation or contemplation through to action stages in their readiness to change their substance use behaviour. It was also expected that their own perceptions of their ability to cope with high-risk situations involving substance use would significantly improve, as would the number of cognitive and behavioural coping skills that they could identify and report to be able to use in high-risk situations.

CHAPTER 2. METHOD

2.1 Design

A multiple-baseline across participants design was used. The original intention was to have four participants, however, owing to attrition and time constraints, three participants completed treatment and follow-up. The first participant began treatment after a twenty-day baseline, the second after a twenty-five day baseline, and the third after a thirty-day base line. The treatment was a brief standardised cognitive-behavioural therapy (CBT) consisting of 8-10 sessions. Single-case multiple-baseline designs are appropriate to use in clinical settings to evaluate treatment effectiveness, especially in incidences when it would be unethical or impractical to use a withdrawal or reversal design (Barlow & Hersen, 1984). Multiple baseline designs have also been reported to be particularly useful in clinical applications or in studies involving small numbers of participants, or for piloting (Kazdin, 1998). Here, it was used to provide an initial test of a cognitive-behavioural treatment programme.

2.2 Participants

Referral and Selection

Throughout a 12-month period, school guidance counsellors referred fifteen potential participants from Wellington and Kapiti high schools. The guidance counsellors had identified that substance use/abuse/dependence by the students was interfering with educational and behavioural goals. The students were referred to WellTrust, a community agency that works with secondary school students who have mild to severe substance use problems. The cognitive-behavioural intervention that is the focus of this research was provided under the auspices of WellTrust, as one of the services.

Inclusionary/Exclusionary Criteria

Participants had to meet DSM-IV (APA, 1994) diagnostic criteria for substance dependence or substance abuse (Appendix A). Participants were required to be aged between 12 and 18 years of age and have an IQ greater than 80. Potential

participants were excluded if they had received a formal intervention for alcohol or drug abuse or dependence within the past three months or if they were currently engaged in treatment for any substance use problem. Participants who demonstrated a severe Axis I disorder (e.g. psychosis, documented severe behavioural difficulties, major depression and currently suicidal) were referred appropriately, as were any other potential participants who did not meet the criteria for the present study. One potential participant was excluded at this point owing to current suicidal ideation and recent attempts.

Informed Consent

After the students were referred to WellTrust and met inclusionary criteria, they were approached by their school guidance counsellor to see if they, along with their parents, would like to participate in the research programme. Owing to ethics constraints, adolescents who were not amenable to having their parents informed were excluded from the study and referred to other services through their school guidance counsellors and/or WellTrust. Six of the potential participants declined to participate at this point, all stating that they did not want their parents or caregivers to find out that they had an alcohol or drug problem. The participants (n=8) who indicated an interest in participating were sent a letter (Appendix B) inviting them to participate in the research project together with the Information Sheet (Appendix D). All students chose to participate in the research and were invited to attend an individual information session with the researcher. Because of the age of the participants (13 – 17 years), students were asked to come with a parent/caregiver to the session, and a letter and information sheet was also sent home to parents (Appendices C & E). If the parent/caregiver was not able to attend an information session in person (n=2), then a telephone information session was held between the researcher and the parent/care-giver, prior to the information session held with the participant. At the session, the research project was explained in detail. All the adolescents and their parents/caregivers chose to participate in the research project, and were given the consent forms (Appendix F). Participants and parents were able to ask any questions and had the full details of the study explained to them (See Appendix G for the full protocol of informed consent and assessment).

Treatment completion

Owing to the high treatment dropout rates reported in the literature, it was decided prior to approaching schools, that all interested participants would be included in the treatment programme (more than the four participants originally required for the multiple baseline study). Consequently, eight participants completed the full assessment battery. The first and second began treatment after a fifteen day baseline, the third and fourth began treatment after a twenty day baseline, the fifth and sixth after a twenty-five day baseline, and the seventh and eighth after a thirty day baseline. Four participants were expelled from school during their time in the programme. Participant's one and eight were expelled prior to treatment starting, but after assessment and baseline had been completed, for cannabis use in school and repeated truancy. Participant 2 was expelled from school for theft after one treatment session had been carried out. Participant four was expelled after the third therapy session, also for a number of instances of cannabis use at school. Participants 1, 2 and eight decided to withdraw from the study after being expelled. Participant four expressed interest in continuing with the therapy, but did not turn up to any subsequent scheduled sessions. A fifth participant (participant five) turned sixteen during the course of therapy (between the 4th and 5th sessions) and decided to leave school and got a job in the South Island, effectively excluding herself from the research. Consequently, only three participants completed treatment.

Participant's three, six and seven completed treatment and are the participants who are the focus of the present research. It became clear about 11 months into the year that the dropout rate would result in a less than optimal number of participants completing treatment. However, owing to the time constraints of a master's thesis, it was not possible to extend the timeframe of the research any more than was already done, to include more participants. Consequently, three adolescents who met DSM-IV (APA, 1994) diagnostic criteria for Substance Abuse or Dependence participated in and completed the treatment.

Participant Characteristics

Participant 1

Matthew, a 15-year-old Caucasian male, was referred for treatment because of recurrent school and legal problems due to his substance use. Matthew lived at home with his mother, stepfather and older (17 yr old) brother, and reported a high level of conflict in his relationships with all members of his family. He reported daily use of cannabis and inhalants, predominantly aerosol spray cans and amyl nitrate. He was also a regular amphetamine user, snorting crushed Ritalin tablets, on average three or four times a week. He also reported using alcohol about three times a week. He had also used a wide range of other substances, including ecstasy, speed, glue, petrol, sleeping tablets, and ketamine. He had a history of depression, including two suicide attempts, and was taking anti-depressant medication, which he reported was working well to regulate his mood. He had been using substances since approximately ten years of age. He perceived his substance use to have many beneficial consequences for him, including being "fun", and keeping him from being bored, and also keeping his mind off his problems, and to "forget about things". However, he did express a wish to cut down on his use of all substances, due in particular to concerns for his health – "If I don't cut down, I'm going to die". He had received both inpatient and outpatient treatment for drug use in the preceding three years, but on each occasion had returned to his prior level of use within a short time of completing treatment. Matthew met diagnostic criteria (DSM-IV, APA, 1994) for Alcohol Dependence Disorder, Cannabis Dependence Disorder, Substance Dependence Disorder (Amphetamines), and Substance Abuse Disorder (Inhalants).

Participant 2

John, a 14-year-old Maori/Scottish male, was referred for treatment due to suspicions from the school and his father that he was using cannabis, despite continuing protests from John himself that he no longer used. John had been expelled from a previous school after being 'snapped' selling cannabis (which he had reportedly stolen from his father). John lived at home with his father and reported that they had a good relationship. He had regular contact in the school

holidays with his mother who lived with her boyfriend in a town about three hours distance from John's home. He also had two younger half-brothers who lived with his mother. John reported regular use (2-4 times a week) of cannabis at the time of treatment entry, and had been using cannabis regularly for approximately six months. He reported occasional use of alcohol, about once every four or five months, and did not drink any alcohol during baseline assessment or during treatment. Although he said that he enjoyed 'the buzz' of smoking cannabis, he reported wishing to cut down 'or maybe quit' using cannabis 'for my dad', stating that his father was against John using cannabis until he was older and had finished school. John also requested help in quitting smoking cigarettes, and although that was not the focus of the treatment, he also applied the skills taught throughout the treatment sessions to his cigarette smoking. He had received no prior treatment for substance abuse. John met diagnostic criteria (DSM-IV, APA, 1994) for Cannabis Abuse Disorder.

Participant 3

Mark, a 15-year-old Caucasian male, was referred due to concerns about his level of cannabis use. Mark lived at home with his mother, stepfather, and younger sister. He also had an older (19 yr old) sister, who no longer lived at home. He reported having first used cannabis at the age of 12, and being a regular user (at least once a week) for about two years. He had reportedly recently cut down his use to Fridays, Saturdays and Sundays on school weeks at the urging of his older sister. He was concerned about the level of his use in the weekends and school holidays. Mark was particularly concerned about his inability to turn cannabis down when offered and the fact that he perceived it was making him "dumber", particularly given his stated wish to do well in school. He reported enjoying many things about his cannabis use, including the fact that he enjoyed the "buzz", it tasted "nice", made him feel "relaxed and happy", and made "everything" better and less boring. He also reported using alcohol on average once a fortnight, but was not at all concerned about his usage in this area, and treatment focused on cannabis use. He had received no prior treatment for substance abuse. Mark met diagnostic criteria (DSM-IV, APA, 1994) for Cannabis Dependence Disorder.

2.3 Assessment

A battery of measures, as recommended in the literature (Williams & Chang, 2000), including a structured diagnostic interview, self-reports, and parent ratings, were administered and obtained. All measures were administered at pre-treatment, within one week of treatment completion, and then again at ten weeks post-treatment. Owing to time constraints, it was not possible to conduct any further post-treatment assessments for the thesis. However 6 month and 12 month post-treatment assessments are also planned as part of the ongoing outcome study. Three indices were also administered weekly during baseline and prior to every treatment session during treatment.

Assessors

As is consistent with the literature on treatment outcome research methodology (Carroll, 1997), assessment was separated from treatment provision to reduce demand characteristics. A trained independent assessor – a graduate level psychology student, specifically trained in the use of the measures/instruments - carried out the assessments. The assessment sessions were audio taped, and the diagnostic interview was reviewed to ensure inter-rater reliability.

Diagnostic Interview

Adolescent Diagnostic Interview (ADI) (Winters & Henly, 1993).

The ADI was chosen because it is specifically designed to assess substance use problems in adolescents, and can also be used as a diagnostic tool, yielding information about the presence or absence of a DSM-IV Substance Use Disorder. It also evaluates psychosocial stressors, school and interpersonal functioning and cognitive impairment, and screens for specific problems commonly associated with substance abuse. It has a high level of inter-rater reliability, with Kappa scores ranging from .53 to 1.00 across the 15 abuse and dependence disorder agreement comparisons, with the majority above 0.75 (Winters & Henly, 1993). It has sound content-related validity, with the major content sections of the ADI (Psychosocial Stressors, Substance Use Disorder Symptoms, and level of functioning) based on

DSM IV content and criteria. It also correlates highly with other measures of adolescent substance abuse (Winters & Henly, 1993).

Self-Report Measures

Continuous assessment consisted of the daily records of substance use, the perceived benefits of drinking and drug use scales, and the readiness-to-change instruments. Daily records of substance use were kept throughout baseline and treatment. The Perceived Benefits of drinking and drug use scales were administered weekly throughout baseline and prior to every session during treatment, as were the readiness-to-change instruments. All other measures were administered prior to treatment, within one week post-treatment, and at a ten-week follow-up.

Daily Substance Use Records

Throughout baseline and treatment, as recommended in the literature (O'Callaghan & Callan, 1992; Williams & Chang, 2001), participants recorded their daily substance use on a diary sheet, recording both amount and type of substance used (see Appendix H). During baseline assessment and during follow-up, the participants were given substance record sheets and provided with freepost envelopes in which to send back their daily records on a weekly basis. During treatment, the daily record sheet was turned in prior to every session. Diaries of daily substance use have been found to be accurate measures of both quantity and frequency of drinking and drug use in young adults (O'Callaghan & Callan, 1992).

Perceived Benefit of Drinking/Drug Use Scale (PBDS) (Petchers and Singer, 1987).

The PBDS was administered weekly throughout baseline and prior to every session during treatment. It was also administered at the ten-week follow-up. The PBDS was used to assess some of the reasons that the adolescents in the study drank or used drugs. It is a commonly used screening instrument for adolescent substance abuse/tolerance and indicates the need for a more comprehensive substance use assessment. It only requires 1-2 minutes to complete and comprises of 5 true/false statements, (e.g. Drinking helps me forget my problems). Originally designed with only alcohol as the focus, the present study modified the measure to include other

substances also, which was administered in a separate form. All five original questions had the words 'taking drugs' inserted in the place of 'drinking' (e.g. Taking drugs helps me forget my problems). This measure has been expanded in order to measure reasons for drug use in other studies looking into drug and alcohol use with adolescents, and found to retain high levels of reliability and validity (Petchers, Singer, Angelotta, & Chow, 1988). The perceived benefits of drinking and drug use scales were administered twice weekly during baseline and then again prior to each treatment session, in order to provide an ongoing measure of the participant's thoughts and feelings about alcohol and drug use. Scores on the PBDS have been found to be significantly related to several key indicators of drinking behaviour: Frequency of being drunk, presence of problems related to drinking, and to the presence of trouble related to drinking. Consequently the Perceived Benefit of Drinking Scale demonstrates strong convergent validity (Petchers & Singer, 1987).

Readiness to Change Questionnaire (RCQ).

Participants in the present study completed the Readiness-to-change questionnaires weekly during baseline, prior to every session during treatment, and at a ten-week follow-up. The RCQ is a questionnaire designed to assess people with substance abuse problems using Prochaska and DiClemente's stages-of-change model. Common characteristics of each of the assessed stages of change are outlined in Table 1.

Table 1. Example characteristics of individuals in each stage of change.

Stage of Change	Example characteristic
Pre contemplation	Lacking awareness of a problem Defensive
Contemplation	Thinking about making change Evaluating pros and cons of their behaviour
Action	Efforts to modify behaviour and/or environment are being taken

Note. Adapted from Connors, et al., 2001.

The Readiness-to-change Questionnaire contains 15 items that are rated on a likert-type five point scale as follows: strongly agree (-2), disagree (-1), unsure (0), agree (+1), or strongly agree (+2). It requires 2-3 minutes to administer. The RCQ assigns problem drinkers/drug users to Precontemplation, Contemplation, and Action stages, with five questions comprising the scale for each stage (possible score of –10 to +10 for each stage of change). Originally designed to be used in hospital/medical settings, it is a quick and effective way of assessing problem drinker's readiness to change their drinking behaviour. The authors of the measure conducted research into its psychometric properties and it has been shown to demonstrate adequate internal consistency, test-retest reliability and concurrent validity (Rollnick, Heather, Gold, & Hall, 1992). Alpha coefficients for the four-item scales were as follows: precontemplation 0.73, contemplation 0.80, and action 0.85. There has been one New Zealand study reviewing a revised version of the RCQ for a New Zealand setting (Coynash, 1997, cited in Bashford, 2000), which found levels of reliability and validity equal to those of the Rollnick et al. (1993) study. Research has shown that RCQ stages of change are a strong predictor of changes in drinking at six-month follow-up even when other predictors have been taken into account (Heather, Rollnick & Bell, 1993). Participants in the present study were administered the original treatment version of the RCQ, as well as a modified version, in which the word "drinking" was substituted with the words "cannabis use". This has been done in another New Zealand study (Bashford, 2000) and found to retain its psychometric properties, albeit based on a very small sample (n=18). Both the drinking and cannabis use versions of the RCQ were administered to participants twice weekly during baseline, prior to every treatment session, and at one week and ten week follow-up assessments.

Personal Experience Inventory (PEI) (Winters & Henly, 1989).

The PEI was administered pre-treatment, within one week of treatment completion, and at a ten-week follow-up. The PEI is a self-report inventory designed specifically to identify adolescents (12-18 year olds) with drug and alcohol problems. It covers all forms of substance abuse and assesses both chemical involvement and related psychosocial problems. It is recommended as a comprehensive assessment tool in adolescent treatment outcome research (Spooner et al., 1996; Leccese & Waldron, 1994) and is widely used in clinical practice also (Winters & Henly, 2002). It is

recommended by the National Institute on Drug Abuse in the USA (Winters & Stinchfield, 1995). The PEI assesses drug use, frequency, duration, and age of onset. It contains 10 Problem Severity Scales, consisting of 153 questions, which assess drug use severity (personal involvement with chemicals; effects from drug use; social benefits of drug use; personal consequences of drug use; polydrug use; social-recreational drug use; psychological benefits of drug use; transsituational drug use; preoccupation with drugs; loss of control). It also has 12 Psychosocial Scales, consisting of 147 questions, which examine interpersonal and environmental risk factors (negative self-image; psychological disturbance; social isolation; uncontrolled; rejecting convention; deviant behaviour; absence of goals; spiritual isolation; peer chemical involvement; sibling chemical use; family pathology; family estrangement).

In both the problem severity and psychosocial sections, items are rated in a variety of ways. The items for the first 72 questions, and for items 97 to 110, are rated on a likert scale from 0 – 4, with 0 = Never, 1 = once or twice, 2 = sometimes, 4 = often. Items 111 and 113-123 are rated on a seven point scale consisting of 'Never', '1 or 2 times', '3 to 5 times', '6 to 9 times', '10 to 19 times', '20 to 39 times' or '40 or more times'. Other questions ask the participant to indicate which year of school they were in when they began using particular substances. The psychosocial scale items are rated on a four point likert scale, with ratings of either 'strongly disagree'-'disagree'-'agree'-'strongly agree', or 'seldom or never'-'sometimes'-'often'-'always' provided. Additionally, the PEI has 6 problem screens, comprising of various items found in the scales already discussed, screening for problems commonly associated with substance abuse/dependence, and for safety issues: Family Chemical Dependency, Sexual Abuse, Physical Abuse, Eating Disorder, Suicide Potential and Psychiatric Referral. The PEI takes approximately 45 minutes to complete.

A large scale study by the authors of the measure (Winters & Henly, 1994; Winters, Latimer, Stinchfield, & Henly, 1999), collecting research data from over 45 drug abuse/evaluation programmes and 8 juvenile offender facilities across the USA and Canada since 1985, reported that the PEI demonstrates high levels of reliability and validity. The alpha coefficients for the two main subscales are good to excellent, with a range of .70 - .97 for the Chemical Involvement Problem Severity Scales, and a

range of .66 - .91 for the Psychosocial Scales. Test-retest reliability over a one-month interval has been shown to be adequate (.80 - .90 for the Chemical Involvement Problem Severity Scales, and .63 - .96 for the Psychosocial Scales). The PEI has also been found to have adequate convergent validity, discriminant validity and predictive validity. For example, PEI scores have been found to correlate highly with other measures of drug abuse problem severity (Winters & Stinchfield, 1995), and the psychosocial scales demonstrate convergence with the MMPI (Winters & Henly, 1994). The PEI is sensitive to measuring change pre-treatment to post-treatment and at one-year follow-up (Winters et al., 1999). Norms are provided for both drug clinic populations and normal high school populations, by age and gender.

Adolescent Relapse Coping Questionnaire (ARCQ) (Myers & Brown, 1995).

The ARCQ was used to assess the participant's ability to cope with situations providing temptation for alcohol and other drug use. This measure was selected to specifically assess the participants' temptation-coping skills prior to and after treatment. The measure involves participants being presented with a hypothetical situation that presents a high-risk for relapse and is the most common relapse situation reported by adolescent substance abusers – a social gathering at a friend's house where others are present and both alcohol and drugs are offered (Myers & Brown, 1995). The adolescent then responds to 6 appraisal questions, rated on a 1-10 scale, with 1 equalling 'no difficulty', or 'not at all important', and 10 equalling 'very difficult' or 'very important'. This assesses the participants self-efficacy for abstinence and perceived difficulty, and perceived importance of abstinence in the situation (e.g. 'How difficult would this situation be for you?', 'How important is it that you don't drink or use in this situation?'). The measure also consists of a 28-item checklist of coping strategies (e.g. 'Use the support of a higher power'; 'Do something instead of using or drinking'). Adolescents rate whether they would or would not use a given strategy in the situation on a 1-7 likert scale, with one indicating something they 'Definitely would not do or think', four indicating something they 'Might do or think', and seven indicating something they 'Definitely would do or think'.

The results of the questionnaire yield coping ability in three main areas: 1) Generic Cognitive and Behavioural Problem Solving, 2) Self-Critical Statements, and 3) Abstinence-Focused Cognitive and Behavioural Coping. High Scores on scale three, which comprises of statements that focus specifically on the situational demands of a temptation situation, and on the negative consequences of the substance use, have shown to be the most highly related to future abstinence (Myers & Brown, 1995). From six appraisal questions, the perceived importance of abstinence is also correlated highly with current drug/alcohol use and future use at one year post-treatment. The measure has adequate internal consistency and various studies to date have 'consistently found a relation between self-reported coping responses (on the ARCQ) and post treatment alcohol and drug use' (Myers & Brown, 1995, p40). The participants' in the present study completed the ARCQ at pre- and post-treatment assessments, and at ten-week follow-ups. The ARCQ has been recommended as a useful treatment outcome measure particularly with Cognitive-Behavioural treatment programmes as it directly assesses whether teenagers have acquired the skills that CBT treatment programmes aim to develop (Deas & Thomas, 2001).

Youth Self Report (YSR/11-18) (Achenbach, 1991).

Participants' in the present study completed the YSR at pre-treatment, within one week of treatment completion, and at a ten-week follow-up. The Youth Self report (YSR) was used to assess participants general emotional and behavioural functioning. It was designed for, and normed on, adolescents aged 11-18. Its competence and problem items parallel those of the Child Behaviour Checklist (Achenbach, 1991, see next section). However, sixteen items on the CBCL are deemed inappropriate to ask youths (as they are in regard to problems that are characteristic of a younger age, e.g. bedwetting), and are replaced by sixteen socially desirable items, which are not scored on the problem portion of the profile for the YSR. The YSR also has open-ended responses to items covering physical problems, concerns, and strengths. It consists of 102 specific problem items, plus one open-ended item. Youths rate themselves for how true each item is now or was within the past six months, using the same three-point response scale as for the Child Behaviour Checklist: 0 = not true; 1 = somewhat or sometimes true; 2 = very

true or often true. More information on the scales and the psychometric properties are provided in the next section.

Parent Report

Child Behaviour Checklist (CBCL/4-18) (Achenbach, 1991).

The CBCL/4-18 was used to assess general aspects of functioning in the adolescent's life. The CBCL/4-18 obtains reports from parents, other close relatives, and/or guardians regarding children's competencies and behavioural/emotional problems. Parents provide information for 20 competence items covering their child's activities, social relations, and school performance. The CBCL/4-18 has 118 items that describe specific behavioural and emotional problems, plus two open-ended items for reporting additional problems.

Parents rate their child for how true each item is now or within the past 6 months using the following scale: 0 = not true (as far as you know); 1 = somewhat or sometimes true; 2 = very true or often true. The CBCL/4-18 scoring profile provides raw scores, T scores, and percentiles for three competence scales (Activities, Social, and School), Total Competence, eight cross-informant syndromes, and Internalising, Externalising, and Total Problems. The cross-informant syndromes scored from the CBCL/4-18, Teacher Report Form, and Youth Self Report are Aggressive Behaviour; Anxious/Depressed; Attention Problems; Rule-Breaking/Delinquent Behaviour; Social Problems; Somatic Complaints; Thought Problems; and Withdrawn/Depressed.

The CBCL, and YSR, are widely used to assess child/adolescent functioning in a variety of settings, and reliability and validity have been demonstrated in hundreds of studies (Achenbach, 1999). Many studies have also demonstrated the CBCL and Youth Self Report's sensitivity to treatment-related change (Vignoe & Achenbach, cited in Achenbach, 1999). One parent of each participant in the present study was asked to complete the CBCL at pre-treatment, post-treatment, and at a ten-week follow-up.

2.4 Treatment

Setting

Information sessions, assessment and therapy all took place at participants' schools', with participants having school permission to miss class while a therapy session took place.

Therapist

The author, a Masters-level Psychology student in training as a clinical psychologist, carried out the therapy. Therapist training consisted of a graduate-level paper in cognitive-behavioural therapy, a two-day workshop on motivational interviewing and CBT, and an intensive two-day training session in the specific use of the manual used in the study. The therapist then observed the treatment being carried out by the senior author of the manual. The training also consisted of practicing the treatment in its entirety with 'mock' clients, and the researcher was videotaped and observed carrying out the treatment during the training process, to ensure treatment integrity. The training was conducted by the senior author of the manual and by a senior clinical psychologist, who was the chief supervisor for the study. The therapist had weekly supervision throughout the course of the study, and all treatment sessions were audio taped and available to be reviewed for fidelity, as well as for supervision.

Treatment Manual

Therapy followed a 40-page manual: 'Cognitive-Behavioural intervention for substance abusing adolescents' (Vilke & Ronan, 2002). This manual is based on cognitive-behavioural intervention strategies described in two manuals that have been effectively used in the treatment of adult substance abuse (Carroll, 1998; Monti, et al., 1989). The manual used in the present study was developed and modified for use specifically with adolescents. Due to the range of ages and different substances used amongst the participants, therapy was carried out in a flexible way that met the client's individual needs, while still maintaining treatment fidelity, as is recommended in the literature (Dobson & Shaw, 1988; McGinn & Sanderson, 2001). As client engagement and therapeutic alliance is known to be a predictor of a

successful outcome in psychotherapy (Newman, 1998), every effort was made to ensure that therapy moved at the speed of the client, and that rapport was built.

Intervention

Each participant received eight to ten cognitive-behavioural therapy sessions. The ultimate aim of the WellTrust programme is for adolescents to become abstinent from the use of their problem substance. However, abstinence is not always a realistic or reasonable goal for adolescents (Williams & Chang, 2000), and treatment goals were negotiated and modified for each individual participant, with a significant reduction in use, coupled with a significant reduction in problems related to that use, being the main goals of therapy. Therapy sessions focused on:

- Enhancing motivation through the use of a motivational interviewing style of therapy and a clear explanation of the CBT model;
- Coping with craving through the use of cognitive therapy techniques;
- Goal setting;
- Assertiveness training and development of refusal skills through role plays;
- Problem solving and decision making skills;
- The development of a long-term coping plan;
- The involvement of support people (e.g. friends/parents).

Each therapy session was supported by the use of homework - the participant was asked to do something relevant to the session. The initial session was 90 minutes with each subsequent session being one hour long. From session two onwards, the first 10-20 minutes of each session were spent presenting the outline of the present session, reviewing homework from the previous session, and addressing any concerns that had arisen for the participant. Then approximately 30-45 minutes was spent on that session's key interventions. The final 5-10 minutes were spent reviewing the present session, checking participant comprehension and setting the homework. The order of treatment and the content of each therapy session are outlined on the following pages:

Cognitive-Behavioural Intervention for Substance Abuse (Vilke & Ronan, 2002)

Session One:

Introduction to Treatment and the Cognitive-behavioural model:

- Taking the participants history and establishing a relationship
- Enhancing motivation
- Presenting the CBT model
- Introducing Functional Analysis
- Negotiating Treatment goals and treatment contract
- Providing a rationale for extra-session/homework tasks

Sessions Two (+ extra session option on this topic if needed):

Coping With Craving

- Understanding Craving
- Describing Craving
- Identifying Triggers
- Avoiding cues
- Coping with craving

Session Three:

Building Up Motivation and Commitment to Stop

- Clarifying and prioritising goals
- Addressing Ambivalence
- Identifying and coping with thoughts about substance

Session Four:

Refusal Skills/Assertiveness

- Assessing substance availability and the steps needed to reduce it
- Exploring strategies for breaking contacts with individuals who supply substance
- Learning and practicing substance refusal skills
- Reviewing the difference between passive, aggressive, and assertive responding

Session Five (+extra session option on these topics if needed):

Seemingly irrelevant decisions and problem solving

- Understanding seemingly irrelevant decisions and their relationship to high-risk situations – identifying examples of Seemingly Irrelevant Decisions and practicing safe decision-making.
- Introducing the basic steps of problem-solving and practicing problem solving skills within the session.

Session Six (Support people invited to attend):

An All-purpose Coping Plan

- Anticipating future high-risk situations and developing a personal, generic coping plan.
- Exploring the ways that support people can help in the achievement of substance-related and life goals.

Session Seven:

Support Planning

- Reviewing and applying problem-solving skills to psychosocial problems that present a barrier to effectively meeting goals.
- Developing a concrete support plan for addressing psychosocial problems.

Session Eight:

Termination

- Reviewing the treatment plan and goals.
- Getting feedback from therapist on their view of client's progress.
- Getting clients feedback on the most and least helpful aspects of treatment.

Treatment Materials

A number of materials were used to support the treatment manual, and to reinforce treatment strategies and goals. These consisted primarily of worksheets completed both in session and as homework tasks (referred to as practice exercises). They included Functional Analysis sheets, Daily thought records, Goals worksheets, Skills worksheets, Decision-making analyses, and a Support Plan at the concluding session.

Treatment Integrity

Randomly selected treatment sessions were audio taped and reviewed for treatment fidelity by a Clinical Psychologist familiar with the treatment programme, although uninvolved in the research project, through the use of a checklist containing the key ingredients. Treatment fidelity was found to be 100%.

2.5 Procedure

The initial screening and assessment procedure ensured informed consent (see Appendix G). Guidance Counsellors carried out initial, inclusionary criteria, screening. After participants had been screened and accepted into the programme, an information session was held with the participant and his/her parents/care-givers, at which the consent forms were signed (see Appendix F), and the parents/caregivers completed the Child Behaviour Checklist/4-18 (Achenbach, 1981). Then an assessment with the participant was carried out over two sessions. The first session consisted of the Adolescent Diagnostic Interview (ADI) (Winters & Henly, 1993) in which key data pertaining to demographics, drug use, family history of substance use and psychological problems, pattern and history of drug use and related problems and psychological health were assessed. This also gave the interviewer a chance to assess for safety. The participants also completed the following self-report measures in the first session: The Youth Self Report (YSR) (Achenbach, 1981), the Readiness to Change Questionnaire (RTCQ) (Heather & Rollnick, 1991), and the Perceived Benefit of Drinking/Drug Use Scale (PBDS) (Petchers and Singer, 1987). The second assessment session consisted of the

participants completing the following self-report measures: Personal Experience Inventory (PEI) (Winters & Henly, 1989), and the Adolescent Relapse Coping Questionnaire (ARCQ) (Myers & Brown, 1990). As discussed, all instruments used have known psychometric properties and have been widely used for clinical and research purposes.

The order in which assessment instruments were administered was based upon a rationale. It was considered important to carry out the diagnostic interview prior to the self-report measures, so that some rapport was developed between the assessor and the participant in order to gain as accurate information as possible on the self-report measures. The Youth Self Report was administered prior to other measures due to its general nature, followed by the more specific, substance-related measures. The Personal Experience Inventory was administered in the second session in order to balance the two most time consuming assessments – the ADI and the PEI, and to ensure some diversity within each session in order to minimize the risk of participants becoming bored or tired with the assessment procedure.

Baseline assessment was then carried out for between fifteen and thirty days, depending on the participant. The measures used to establish a weekly baseline and for weekly assessment during treatment were:

1) Daily Records of Alcohol and/or Drug Use
2) The Perceived Benefit of Drinking/Drug Use Scale
3) Readiness to Change Questionnaire (for both alcohol and cannabis)

Therapy then began. Prior to the session, the weekly substance-use records and the PBDS and the RTCQ were collected. A two-hour post-treatment assessment was carried out within one week after the therapy was completed, and again at ten weeks after treatment completion. One week of substance use was also sampled at ten weeks post-treatment. The post- and follow-up assessments consisted of all the pre-treatment self-report measures, the parent measures, and the Adolescent Diagnostic Interview. Six- and twelve- month follow up assessments are also planned.

2.6 Ethical Considerations

The Study was conducted with approval from the Massey University Human Ethics Committee and in accordance with the ethical guidelines of the New Zealand Psychological Society (1985). All participants, and their parents/guardians, were informed both orally and on paper of what the study would consist of and that participation was wholly voluntary and that they had the right to withdraw from participation at any time and still receive treatment. Written informed consent was gathered and participants were encouraged to ask questions about any or all aspects of the study.

CHAPTER 3. RESULTS

The results are separated into three sections. The first section reports the pre-, post- and 10-week follow-up assessment results, including diagnoses across time and participants' scores on the Youth Self-Report, the Personal Experience Inventory, and the Adolescent Relapse Coping Questionnaire. It also reports the parent-measure scores on the Child Behaviour Checklist. The second section is comprised of a direct comparison of changes across multiple baselines throughout baseline and treatment, including participants' self-reported daily substance use, and their baseline and session-by-session scores on the Readiness-to-Change Questionnaire and the Perceived Benefits of Drinking and Drug Use scales. The third section reports the individual results for the three participants more extensively, as not all results are amenable to direct comparison across the multiple baselines (e.g. some substances were used by some, but not other, participants).

The three participants completed all measures in accordance with the procedure outlined in the Method chapter. However, despite a data collection procedure being followed, the parents of participant's 1 and three only filled out the parent/caregiver measure (CBCL4/18) at the pre-treatment assessment, and did not complete any follow-up measures. This is elaborated on in the emotional and behavioural functioning section.

3.1 Clinical Significance

Clinical significance refers to the meaningfulness of change, and is important to include in an evaluation of treatment outcome. In the present study clinical significance was defined as an improvement on functioning that resulted in the participant moving from being in the clinical range to the non-clinical range on measures for which normative information is provided. The measures used in the present study for which appropriate normative information were given are the Child Behaviour Checklist, and Youth Self-Report and the Personal Experience Inventory. Within each of the sections reporting the results for these measures, the clinical significance of any change, if it occurs, is also reported.

3.2 Pre-, Post and 10-week follow-up assessment results

Diagnoses

Diagnostic criteria were assessed using a DSM-IV based structured clinical interview: The Adolescent Diagnostic Interview. Inter-rater agreement of the diagnostic interviews, based on two assessors listening to the audiotapes and making independent diagnoses, was 100%.

As seen in Table 2, participant 1 met the diagnostic criteria for an alcohol dependence disorder, and two substance dependence disorders - one for cannabis and the other for amphetamine use. He also met the criteria for a substance abuse disorder for inhalants. At 1 week post-treatment, he continued to meet the criteria for both alcohol and cannabis dependence, but was in early partial remission for the amphetamine dependence. He continued to meet the criteria for a substance abuse disorder for inhalants. At the 10-week follow-up he was in early full remission for amphetamine dependence and also no longer met diagnostic criteria for a substance abuse disorder with inhalants. Participant 2 met diagnostic criteria for a substance abuse disorder for cannabis at pre-treatment assessment, but no longer met the criteria at post-treatment assessment. He did however meet the criteria for cannabis abuse again at post treatment, due to the fact that he had smoked a joint once at school during the ten weeks post treatment, been caught by a teacher and excluded. Participant 3 met diagnostic criteria for cannabis dependence disorder at pre treatment, and continued to meet criteria at both 1-week and 10-week follow-ups.

Table 2. Diagnoses over time

	Assessment Points		
Participant	**Pre-Treatment Diagnosis**	**1-week Post-Treatment Diagnosis**	**10-weeks Post-Treatment Diagnosis**
1	ADD with PD	ADD with PD	ADD with PD
	SDD (Cannabis) with PD	SDD (Cannabis) with PD	SDD (Cannabis) with PD
	SDD (Amphetamines) with PD	SDD (Amphetamines) with PD (In Early Partial Remission)	SDD (Amphetamines) with PD (In Early Full Remission)
	SAD (Inhalants)	SAD (Inhalants)	No diagnosis
2	SAD (Cannabis)	No diagnosis	SAD (Cannabis)
3	SDD (Cannabis) with PD	SDD (Cannabis) with PD	SDD (Cannabis) with PD

ADD = Alcohol Dependence Disorder

AAD = Alcohol Abuse Disorder

SAD = Substance Abuse Disorder

SDD = Substance Dependence Disorder

With PD = with physiological dependence (i.e. symptoms of either tolerance or withdrawal were present) (see appendix A)

Early Partial Remission = abstinent and symptom free for at least one month since the cessation of dependence and has had some symptoms since cessation of dependence but not enough to meet the criteria for dependence.

Early Full Remission = abstinent and symptom free for at least one month

Emotional and behavioural functioning

Emotional and behavioural functioning was assessed using the Youth Self Report and the Child Behaviour Checklist (Achenbach, 1991). As mentioned earlier, the parents of participants' 1 and 3 only filled out the Child Behaviour Checklist at the pre-treatment assessment and did not complete any follow-up assessments. A procedure was followed in which the parents had the option of coming to a post-treatment assessment session and filling in the instrument there, or of having the instruments sent to them to fill out at home and then sending them back in free-post envelopes. All parents opted for the second option. The checklists were sent out to the parents on the day that therapy was completed with their child. This was followed up one week later with a phone call if the checklist had not been returned. All participants were contacted and agreed to complete and return the checklist. Participant 2's parent returned the checklist after this phone call. A second phone call was made two weeks after the first phone call, and a new copy of the checklist sent out if parents requested it. Both participant one and 2's parents reported that they had the original questionnaire and would return it, but did not. This procedure was again repeated at the ten-week follow-up; with participant 2's parent again being the only one to return the checklist. Consequently, only pre-treatment scores on the CBCL are available for participants' 1 and 3.

In terms of findings, a summary may be found in Table 3. In terms of individual participants, participant 1's Internalising T score was within the normal range on the Youth Self Report, although this was not corroborated by his parent's report on the Child Behaviour Checklist where the Internalising T score was in the clinical range pre-treatment. Participant 1's externalising T and total T scores were in the clinical range pre-treatment, on the YSR and the CBCL. On the YSR, at 1-week post-treatment this had dropped to within the borderline clinical range for externalising T and the total T was within the normal range. All YSR T scores were within the normal range at the 10-week follow-up.

Participant 2's T scores were within the normal range on the YSR for all scales, at all phases of assessment. However, his parent report on the CBCL resulted in clinical

or borderline range T scores, with an internalising T of 66, an externalising T of 63 (borderline clinical), and a total T of 67 at pre-assessment. All of these T scores had dropped one level to within normal or borderline clinical range at the one-week post-treatment follow-up, and were all within a non-clinical (normal) range at the ten-week follow-up.

Participant 3's pre-assessment T scores on the CBCL were all within the normal range. This was also the case on the YSR for participant 3 for his internalising T score and total T score. However, on the Youth Self Report, participant 2's externalising T score was 67, which is within the clinical range. This had dropped to being borderline clinical at 1 week post-treatment, but then had risen again to within the clinical range at the 10-week follow-up (see Table 3).

Table 3. Scores on the Youth Self Report and Child Behaviour Checklist

		Assessment Points		
Measure	**Participant**	**Pre-Treatment**	**1 wk Post-Treatment**	**10 wks Post-Treatment**
YSR (Int.T)	1	55	45	46
	2	35	41	41
	3	50	46	50
YSR (Ext.T)	1	73	63	59
	2	48	54	55
	3	67	60	66
YSR (Total T)	1	72*	58	56
	2	40	48	48
	3	56	52	59
CBCL (Int. T)	1	64	-	-
	2	66	60	53
	3	50	-	-
CBCL (Ext. T)	1	72	-	-
	2	63	56	59
	3	53	-	-
CBCL (Total T)	1	73*	-	-
	2	67	61	54
	3	51	-	-

[-] = missing data.

*These large total T scores are primarily the result of Scale V (Thought Problems) on both the CBCL and YSR: participant 1's pre-treatment T score for Thought Problems was 82 on the CBCL (clinical), and on the YSR went from a T score of 90 (clinical) for Thought Problems at pre-treatment, to a T score of 50 (within the normal range), at 1 week post-treatment.

Relapse Coping Skills

Relapse coping skills were assessed using the Adolescent Relapse Coping Questionnaire (ARCQ). An increased score on this measure indicates an increased ability to use a variety of coping strategies in a situation with high-risk for drinking alcohol or using drugs. As seen in Figure 1 and Table 4, all participants increased their total scores on this measure from pre-treatment to post-treatment, and then these scores increased again over ten week follow-up, although the increase was marginal for participant 2. This increase was relatively evenly distributed across the three types of coping skills measured (see Table 4). It is worth noting that scores on scale three (Abstinence focused cognitive and behavioural coping), have been shown to be the best predictor of concurrent and future substance use (Myers & Brown, 1995).

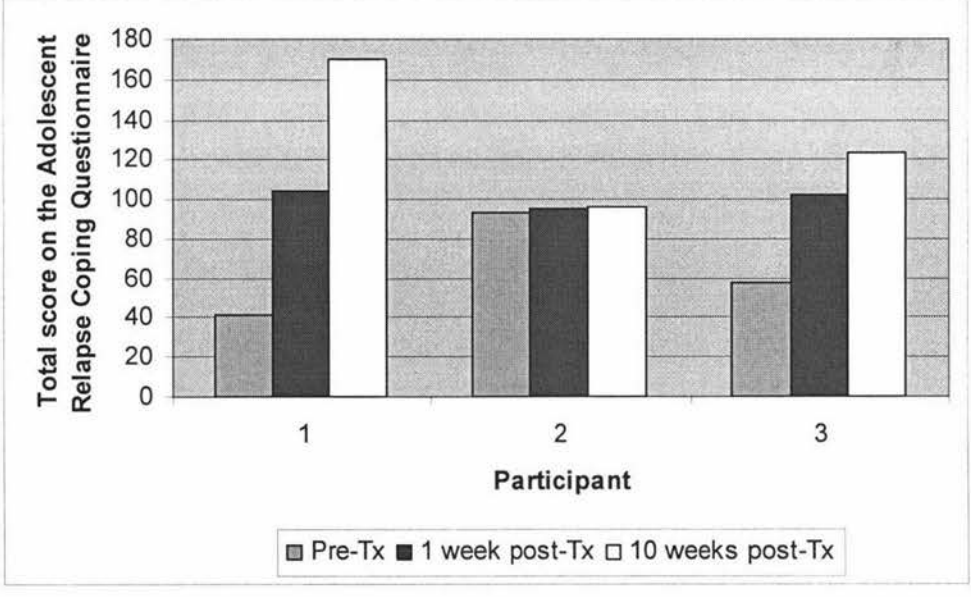

Figure 2. **Total scores at pre-, post- and ten week follow-up assessments for all participants on the Adolescent Relapse Coping Questionnaire (ARCQ).**

Table 4. Self-Report Scores on the Adolescent Relapse Coping Questionnaire (ARCQ)

		Assessment Points		
Measure	**Participant**	**Pre-treatment**	**1-week post-treatment**	**10 weeks post-treatment**
ARCQ (Scale 1)	1	15	52	64
(Cog + Beh.	2	39	46	47
Prob. Solving)	3	28	47	55
ARCQ (Scale 2)	1	15	22	49
(Self-critical	2	24	16	16
thinking)	3	13	25	35
ARCQ (Scale 3)	1	11	30	57
(Abstinence-	2	30	33	33
focused cog. +	3	17	30	33
beh. coping				
ARCQ (Total)	1	41	104	170
	2	93	95	96
	3	58	99	123

cog. = cognitive

beh. = behavioural

Personal Experience Inventory (PEI)

PEI T scores were calculated against the available high school norms, rather than drug clinic population norms, as all three participants were attending high school at the time of assessments, and received treatment in a high school setting. For all scales, participants' scores on the PEI were high compared with high-school norms (mean = 50, SD = 10). Overall, the first participant appeared to demonstrate benefits across all scales; the second, moderate improvement on a few scales; and the third, no real overall improvement. In terms of looking more closely at each participant, participant 1's scores were higher than two standard deviations above the mean for most of the basic and clinical scales at pre-treatment, and although some variation occurred at post-treatment, he was still in the clinical range (see Table 5). However, his ten-week follow-up T scores on all of the basic scales and clinical scales are substantially lower than both his pre-treatment and 1-week post-treatment T scores (see Table 5). In fact, he moved from being in the clinical range to being within the normal range (+ or – one standard deviation from the mean) for a high school population. Participant 1 also demonstrated clinically significant change on a number of the personal risk scales. This is also evidenced by the fact that his T scores had decreased to within a normal range (T of 60 or below) by the ten-week follow-up. Participants 2 and 3's scores were predominantly within the range of one to two standard deviations above the mean at baseline, and remained so post-treatment and at ten-week follow-ups, although participant 2 did appear to derive some benefit on the following scales: Negative Self Image; Uncontrolled; and Deviant Behaviour.

Table 5. Personal Experience Inventory Profiles

		Assessment Points		
BASIC SCALES	**Participant**	**Pre-Treatment T scores**	**1 week Post-Treatment T scores**	**10 Weeks Post-Treatment T scores**
Personal Involvement with Chemicals	1	73	73	51
	2	61	63	61
	3	71	71	71
Effects from Drug Use	1	71	73	51
	2	66	66	66
	3	62	60	62
Social Benefits of Drug Use	1	64	69	51
	2	44	56	52
	3	56	58	56
Personal Consequences of Drug Use	1	73	73	58
	2	60	61	59
	3	68	61	61
Polydrug Use	1	73	73	60
	2	64	64	64
	3	64	64	64
ENVIRONMENTAL RISK SCALES				
Peer chemical Involvement	1	69	68	63
	2	65	65	62
	3	62	62	62

Table 5. continued

ENVIRONMENTAL RISK SCALES cont.	Participant	Assessment Points: Pre-Treatment T scores	1 week Post-Treatment T scores	10 Weeks Post-Treatment T scores
Sibling Chemical Use	1	58	60	54
	2	46	46	46
	3	64	60	62
Family Pathology	1	66	64	68
	2	64	68	62
	3	59	58	57
Family estrangement	1	73	69	62
	2	57	57	60
	3	57	50	57
CLINICAL SCALES				
Social-Recreational Drug Use	1	73	66	49
	2	60	63	57
	3	71	73	71
Psychological Benefits of Drug Use	1	73	73	54
	2	53	58	58
	3	61	71	66
Transsituational Drug Use	1	73	69	63
	2	71	71	69
	3	69	71	69

Table 5. continued

		Assessment Points		
CLINICAL SCALES cont.	**Participant**	**Pre-Treatment T scores**	**1 week Post-Treatment T scores**	**10 Weeks Post-Treatment T scores**
Preoccupation with Drugs	1	66	64	43
	2	61	60	60
	3	64	65	65
Loss of Control	1	73	73	49
	2	51	54	57
	3	73	73	73
PERSONAL RISK SCALES				
Negative Self-image	1	65	61	55
	2	62	48	43
	3	51	54	51
Psychological Disturbance	1	61	56	56
	2	40	40	40
	3	60	58	61
Social Isolation	1	61	56	53
	2	52	45	52
	3	45	48	38
Uncontrolled	1	71	66	47
	2	57	44	44
	3	58	60	60

Table 5. continued

		Assessment Points		
PERSONAL RISK SCALES cont.	**Participant**	**Pre-Treatment T scores**	**1 week Post-Treatment T scores**	**10 Weeks Post-Treatment T scores**
Rejecting Convention	1	66	66	57
	2	44	56	59
	3	58	54	59
Deviant Behaviour	1	73	73	69
	2	63	63	55
	3	68	63	63
Absence of Goals	1	73	73	69
	2	65	65	73
	3	54	65	49
Spiritual Isolation	1	52	57	54
	2	58	60	60
	3	48	55	50

3.3 Direct multiple baseline comparisons

This section contains direct comparisons across the multiple baselines used (18 day, 25 day, and 30 day), using line graphs and histograms to demonstrate changes in substance use across baseline and treatment within and between participants, and changes across time on the multiple measures used.

Cannabis Use

All three participants who completed the treatment programme showed overall reductions in their cannabis use (see Figure 3). Cannabis was the substance that all three participants had in common, so this is also examined across the multiple baselines (see Figure 4). Cannabis was the only substance used by participant 2, whereas participant 1 used a multitude of substances, and participant 3 used both cannabis and alcohol. Individual differences are reported on in more depth in section 3.4.

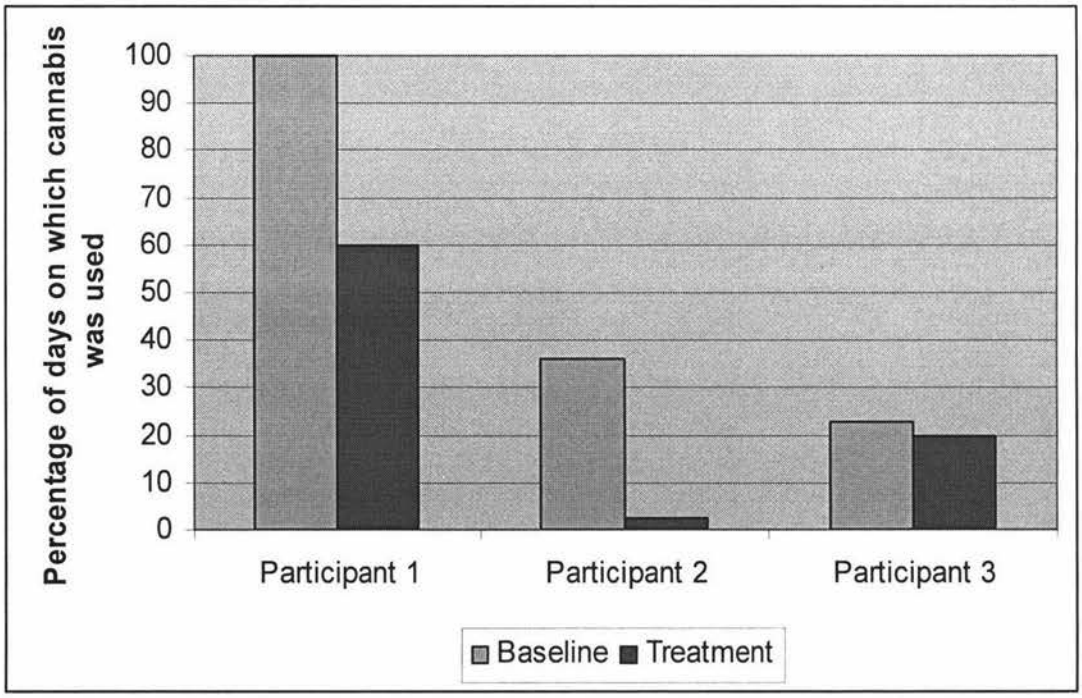

Figure 3. **Comparison of percentage of days on which cannabis was used during baseline and treatment for all three participants.**

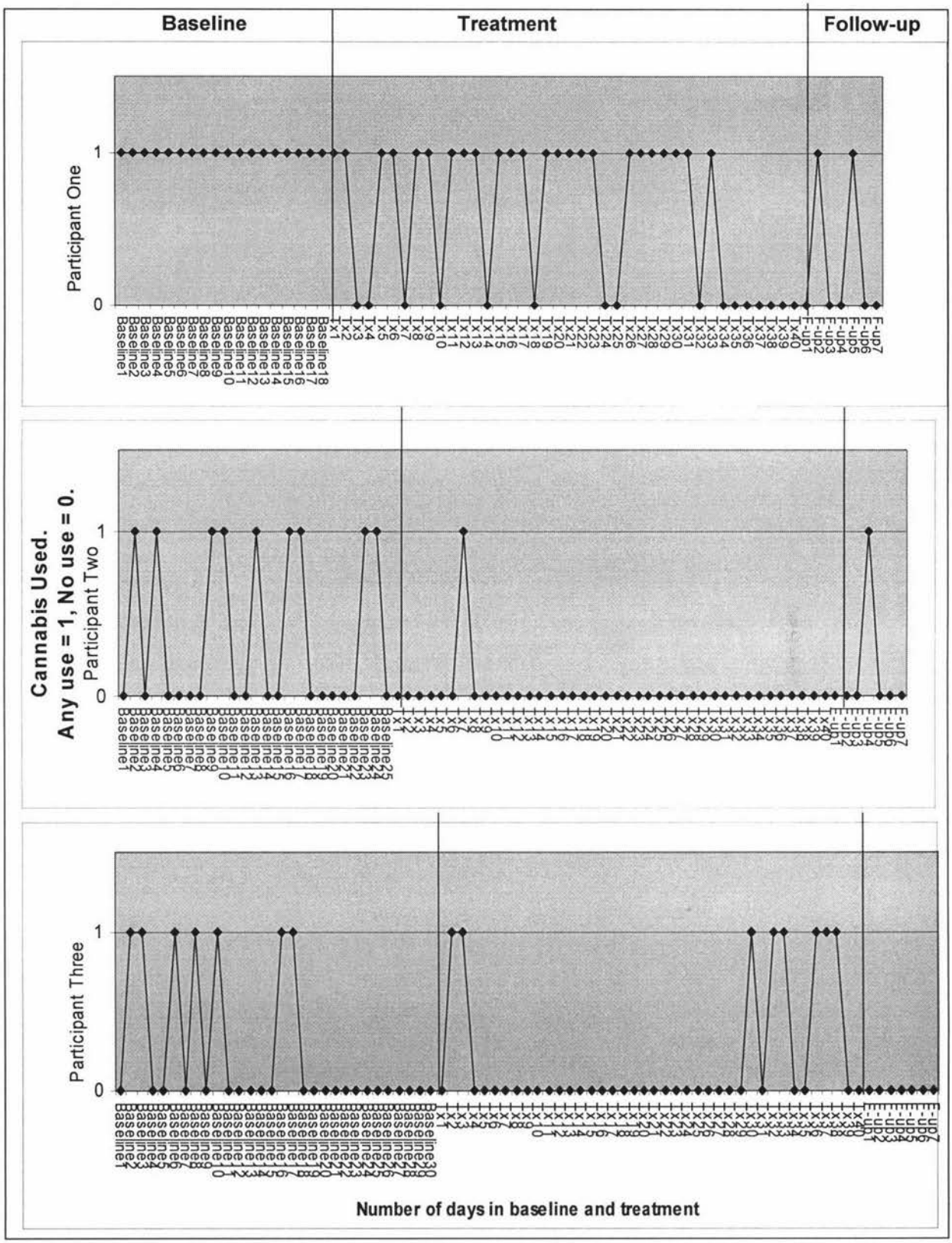

Figure 4. **Self-reported daily cannabis use across multiple baselines and treatment.**

Perceived Benefits of Drinking and Drug Use

Participants' changes in their scores on the perceived benefits of drug use and the perceived benefits of alcohol use are displayed across the multiple baselines. The number of benefits that participants perceived both drinking and drug use to have for them decreased by one or two during the treatment phase for all participants, with the exception of drinking benefits for participant 3, which remained stable at 2 for the entire course of baseline, treatment and follow-up assessment (see figures 5 and 6). Participant 1 was also noteworthy in that he reported a much-reduced number of benefits at the ten-week post-treatment follow-up for both alcohol and drugs, while participant's 2 and 3 remained generally stable.

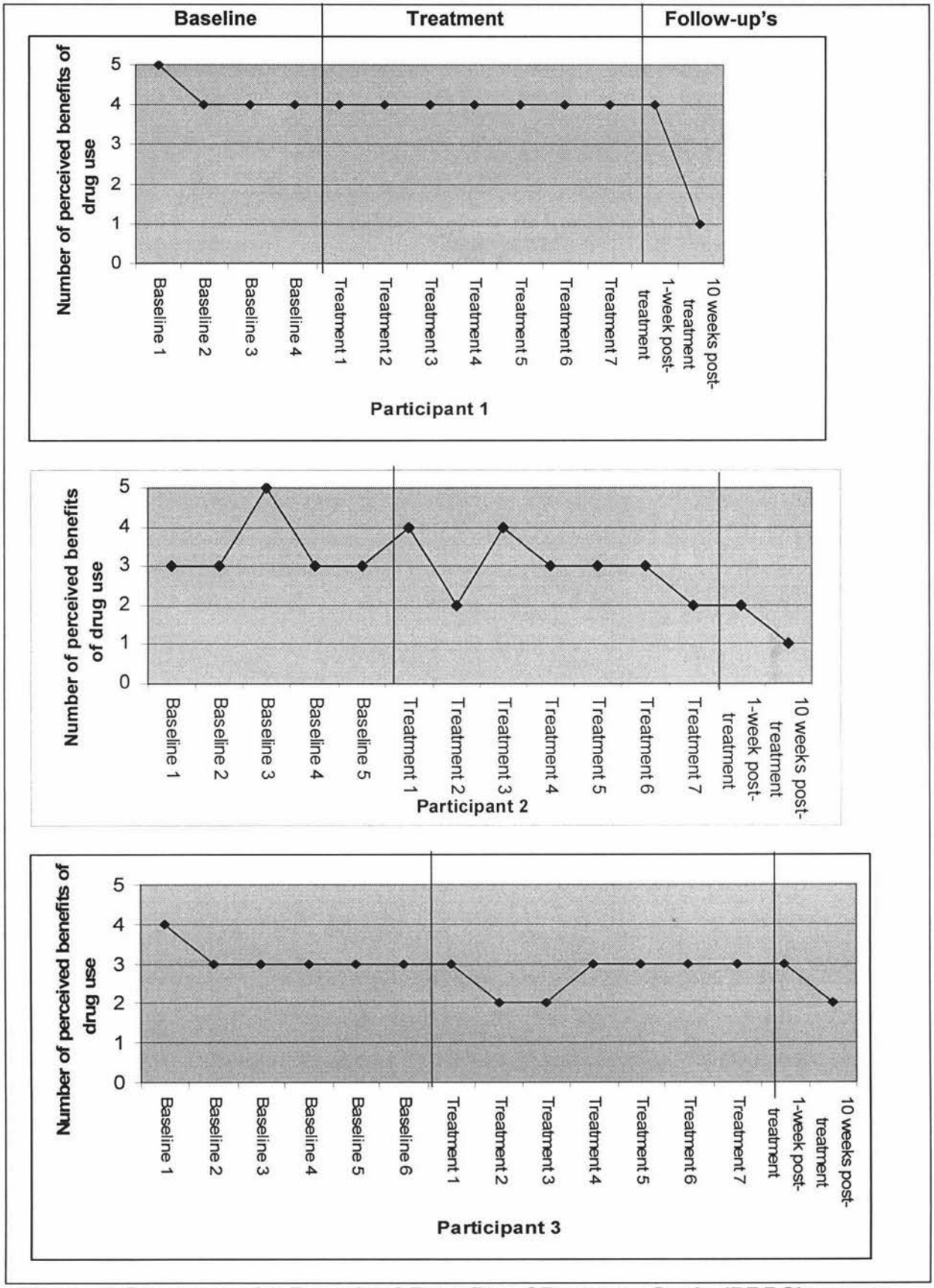

Figure 5. **Scores on the Perceived Benefits of Drug use Scale (PBDS) across multiple baselines and treatment, and at 1-week and 10-week follow-up assessments.**

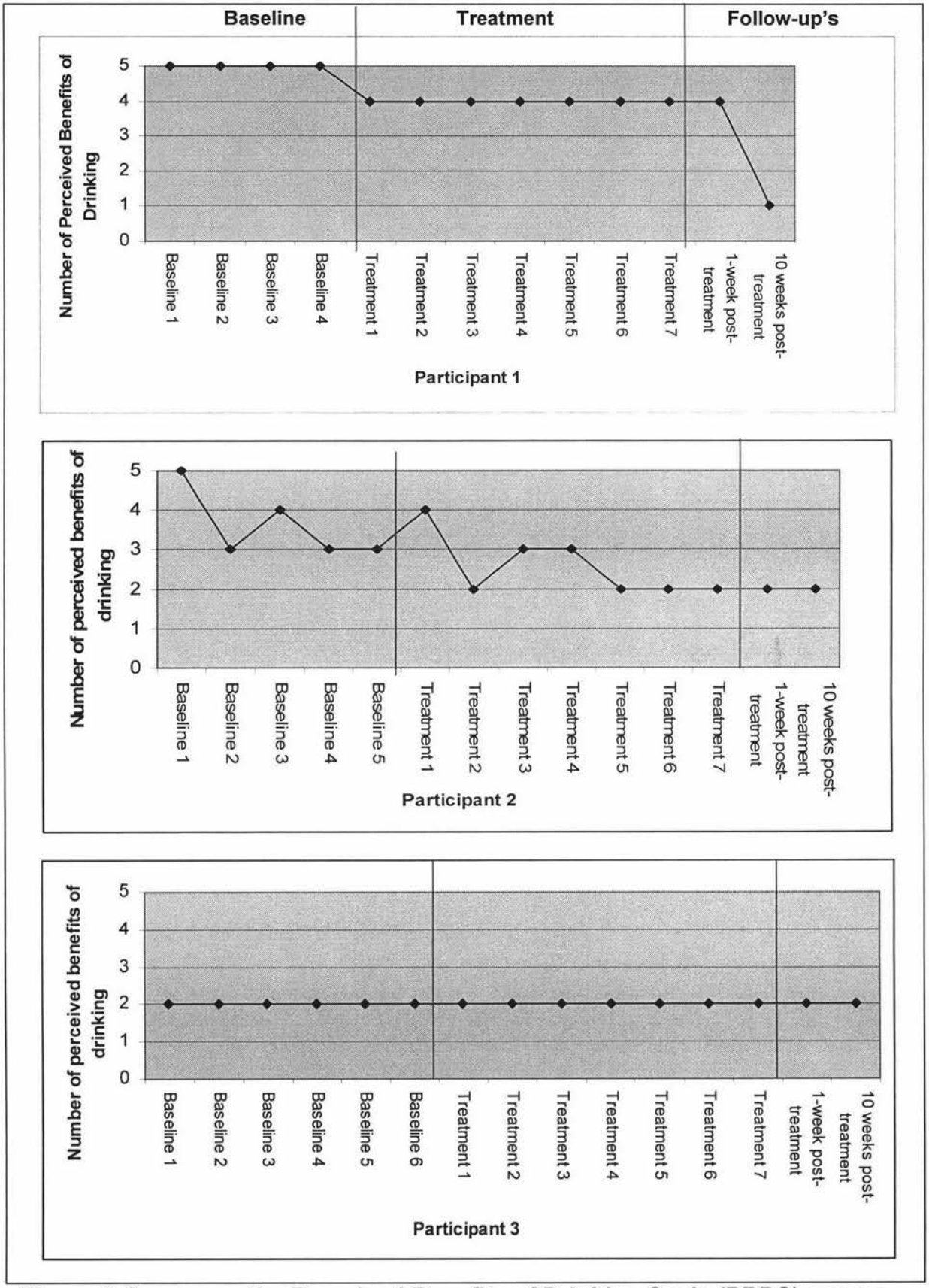

Figure 6. **Scores on the Perceived Benefits of Drinking Scale (PBDS) across multiple baselines and treatment, and at 1-week and 10-week follow-up assessments.**

Readiness to change

Responses to the Readiness to Change Questionnaire (RCQ) were used to designate participants' stages in the Stages of Change model (Prochaska & Diclemente, 1982). The lists of statements in the RCQ form subscales that approximate the theoretical stages of readiness to change. Participants' changes in their scores on the RCQ for both alcohol and cannabis are displayed across the multiple baselines across participants (see Figures 7 and 8). Participants' 2 and 3 remained in the pre-contemplation phase throughout both baseline and treatment in their readiness to change their drinking behaviour (see Figure 7). It is important to note that participant 2 drank no alcohol during either baseline or treatment, so his lack of readiness to change his drinking behaviour needs to be viewed in this context. In contrast, participant 1 moved from initially being in the pre-contemplation phase for his alcohol use behaviour, through to quickly being in the action phase. In terms of cannabis use, participant 1 moved from pre-contemplation through to fluctuating between contemplation and action in his readiness to change his cannabis use behaviour. Participants' 2 and 3 were already fluctuating between contemplation and action during baseline in their readiness to change their cannabis use behaviour, and participant 3 continued to do so throughout treatment. In contrast, participant 2 clearly entered the action stage from session 2 of treatment onwards, and remained so for the entirety of treatment (see Figure 8). It is noteworthy that both participant's 1 and 2 had returned to being pre-contemplative by the ten-week follow-up.

The researchers who developed the measure have suggested that a fourth stage, called 'preparation', be assigned if the score for contemplation is higher than the other two scores, and the action score is also positive (Rollnick et al., 1992). People in the 'preparation' stage recognise that a problem exists and have made a decision to cut down or quit consuming the substance, and are currently preparing to put this decision into action. This 'advanced' scoring is recommended if timing permits. Advanced scoring had no impact on participant 2 and 3's scores concerning readiness to change alcohol use behaviour, as both were clearly in the pre-contemplation stage throughout all phases of assessment. However, using advanced scoring, participant 1 was in the pre-contemplation stage at the first

baseline assessment and then fluctuated between preparation and action in his readiness to change both alcohol and cannabis use behaviours. Participant 2 fluctuated between preparation and action in his readiness to change cannabis use behaviour throughout baseline, and then was clearly in the action stage from session two of treatment onwards. Participant 3 remained in the preparation stage throughout the entirety of baseline and treatment (see Figure 8).

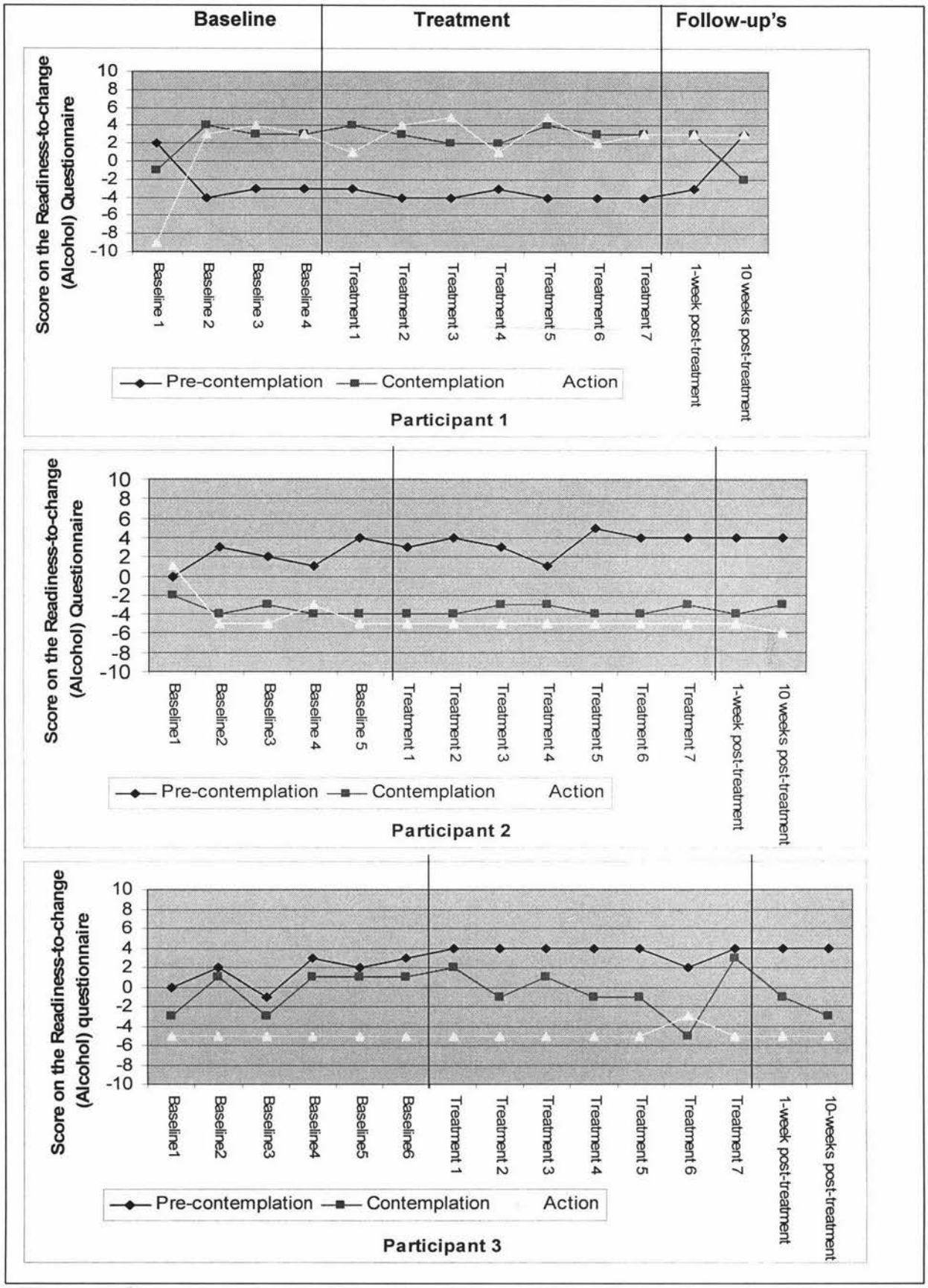

Figure 7. **Scores on the Readiness-To-Change Questionnaire (Alcohol) across multiple baselines and treatment, and at 1-week and 10-week follow-up assessments.**

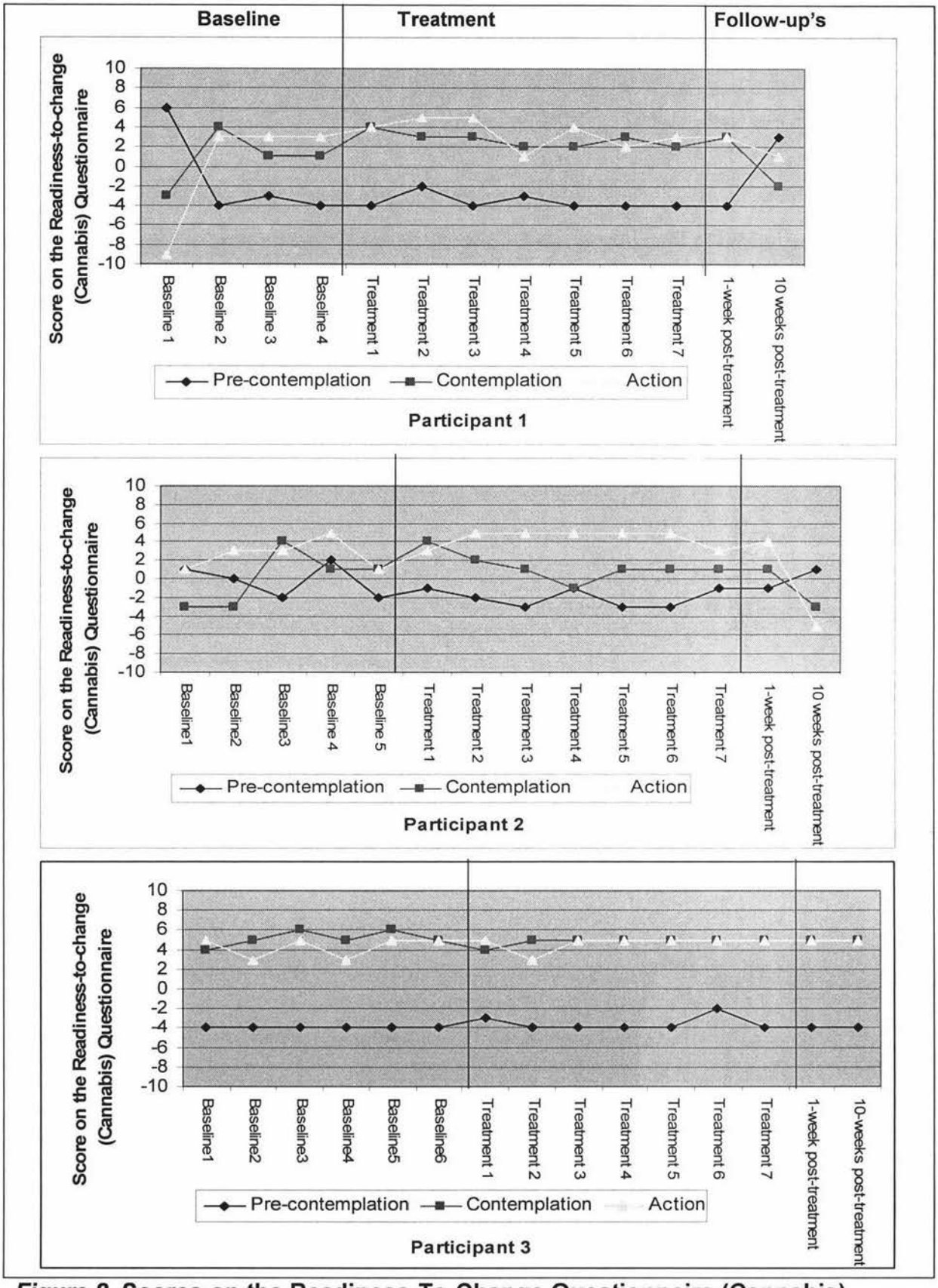

Figure 8. **Scores on the Readiness-To-Change Questionnaire (Cannabis) across multiple baselines and treatment, and at 1-week and 10-week follow-up assessments.**

3.4 Individual case studies - alcohol and other drug use

Participant One (18 day pre-treatment baseline)

Participant 1 recorded his daily substance use throughout an eighteen-day baseline and throughout the forty days in the treatment programme and results are presented in terms of individual substances (Figures 9-16), as well as polysubstance use (Figures 17 & 18). This section presents results across all substances used and includes cannabis used, as previously reported in section 3.2. It is important to note that on day 19 of treatment, participant 1 broke up with his girlfriend, and stated that his increased use in the days following were a direct result of this occurrence.

Participant 1 also reported using ecstasy once during baseline, which is not recorded in a separate graph, as it only occurred the one time, on day five of the baseline. As mentioned earlier, participant 1 often used substances concurrently, so comparisons of his poly-substance use during baseline, and then during treatment and follow-up, are also presented (Figures 17 and 18).

Participant 1's daily records show a decrease in use across all substances. The highest decrease was in his use of inhalants, which he reported to have used on all baseline days (100% - see Figure 14) and which he reported to have used on only eighteen percent of days during treatment. The days during treatment on which inhalants were used were all towards the beginning of treatment, or during the period immediately following the brake up with his girlfriend (see Figure 13). By the end of treatment, participant 1 had reported sixteen days in a row on which no inhalants had been used. Participant 1's polysubstance use also reduced dramatically during treatment (from 100% during baseline to 28% of days during treatment – see Figures 17 and 18).

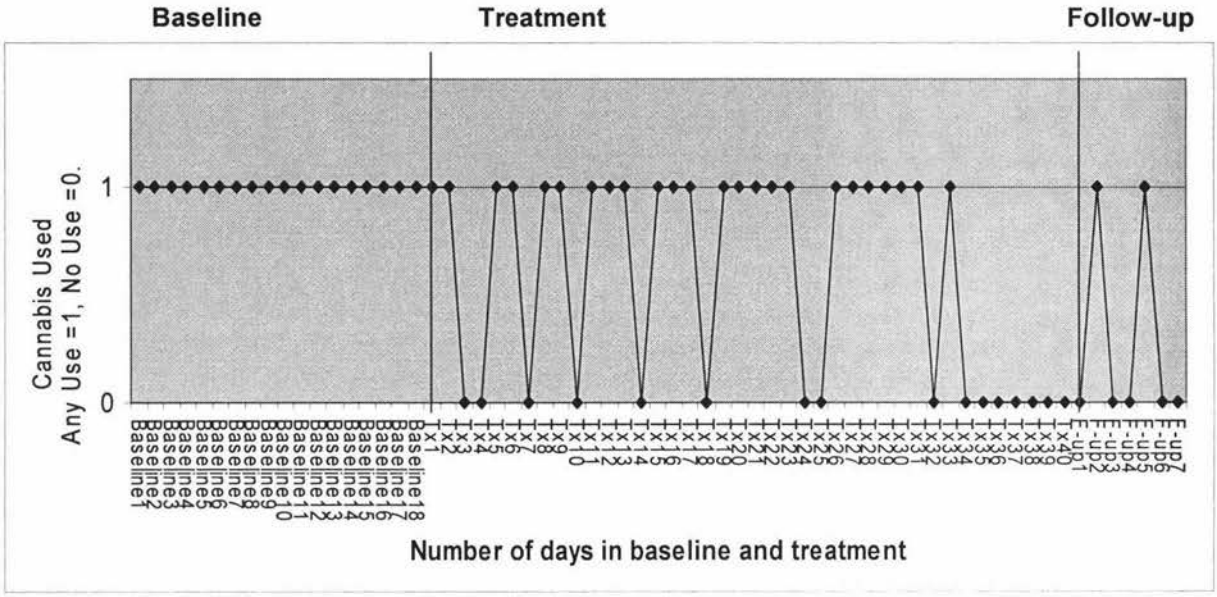

Figure 9. **Self-reported daily cannabis use during baseline and treatment for participant 1.**

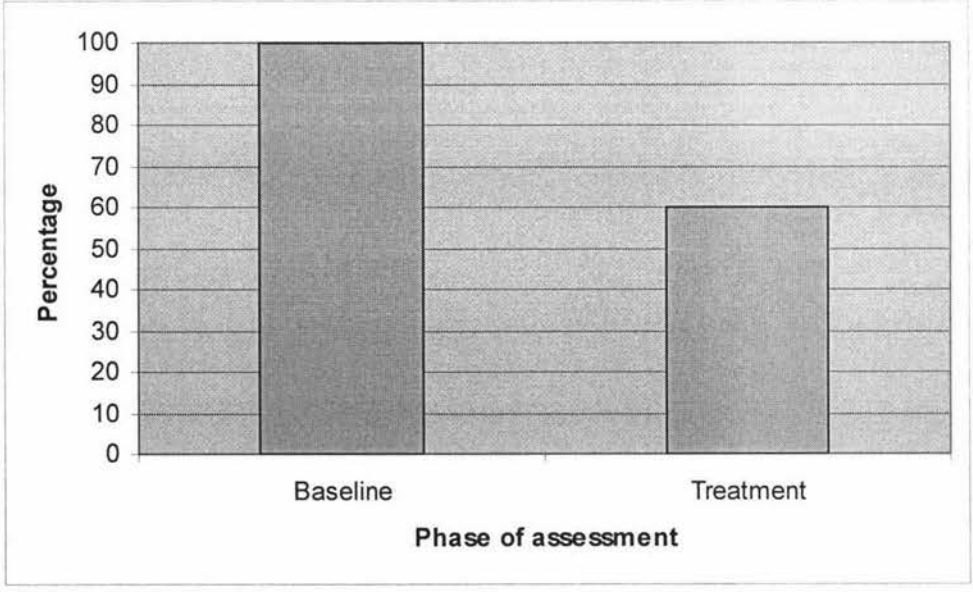

Figure 10. **Percentage of days on which cannabis was used during baseline and treatment for participant 1.**

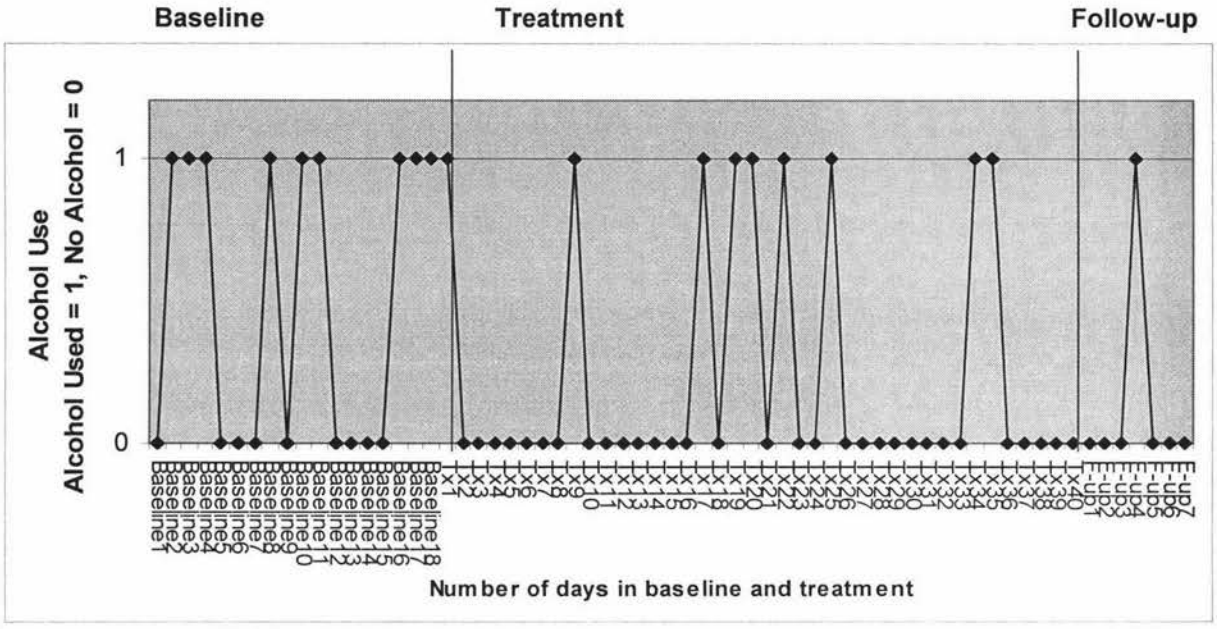

Figure 11. **Self-reported daily alcohol use during baseline and treatment for participant 1.**

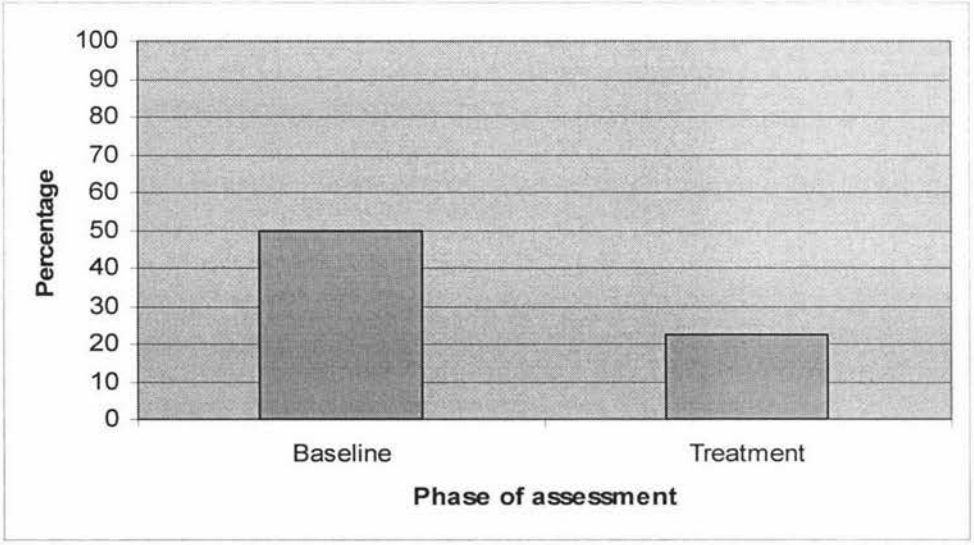

Figure 12. **Percentage of days on which alcohol was used during baseline and treatment for participant 1.**

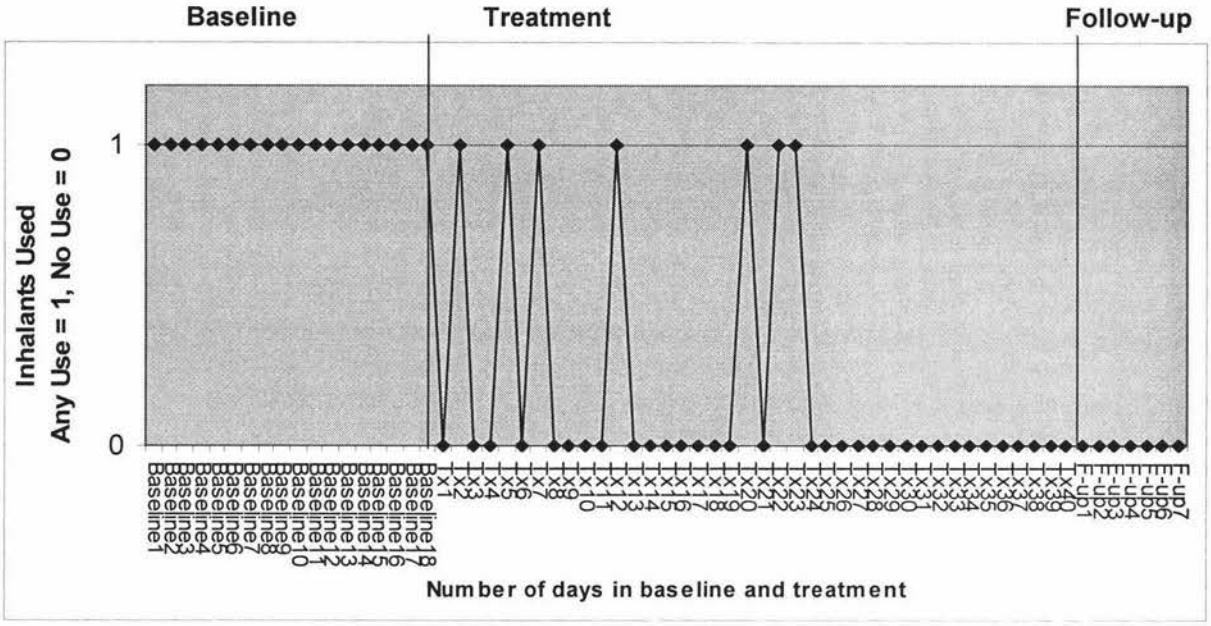

Figure 13. **Self-reported daily inhalant use during baseline and treatment for participant 1.**

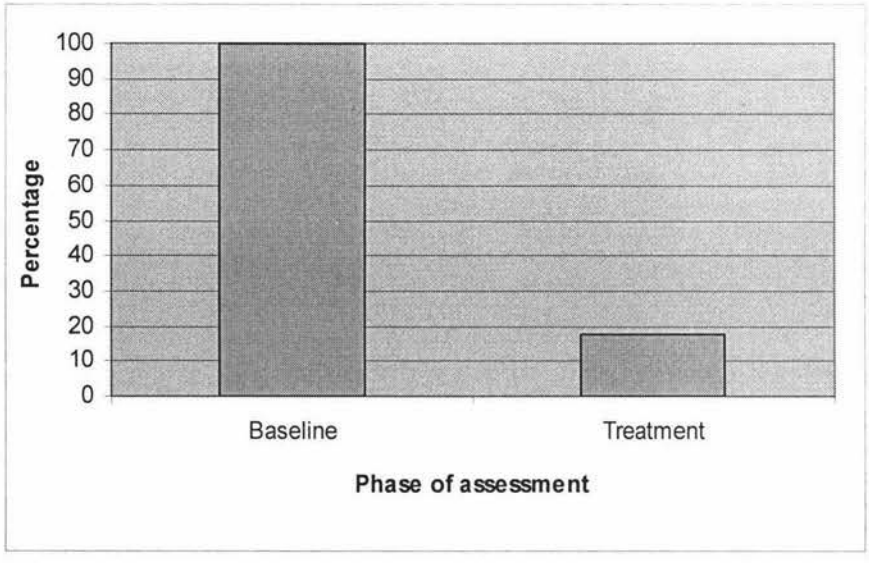

Figure 14. **Percentage of days on which inhalants were used by participant 1.**

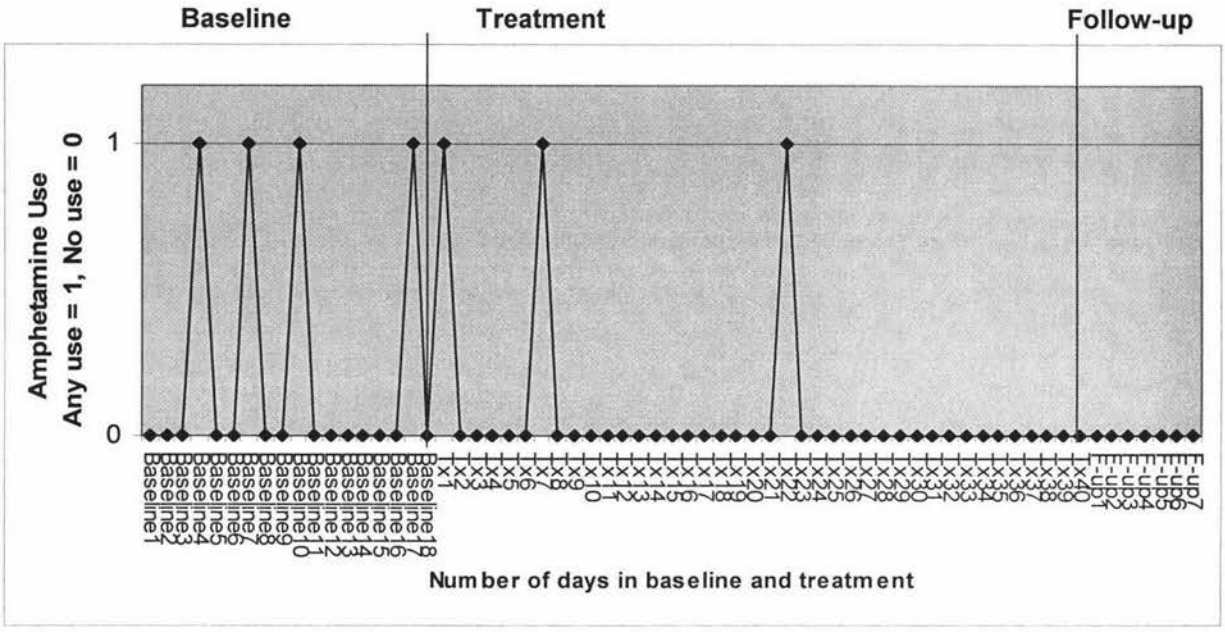

Figure 15. **Self-reported daily amphetamine use during baseline and treatment for participant 1.**

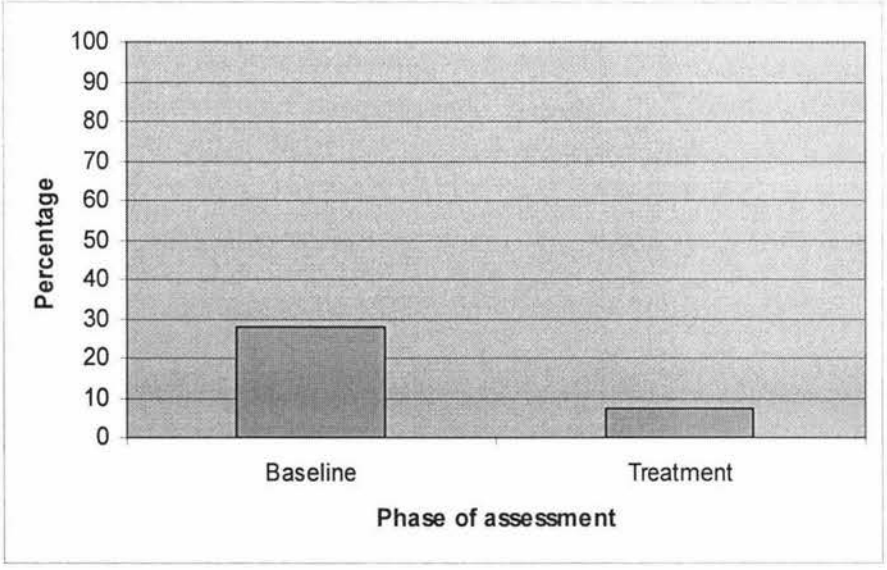

Figure 16. **Percentage of days on which amphetamines were used by participant 1.**

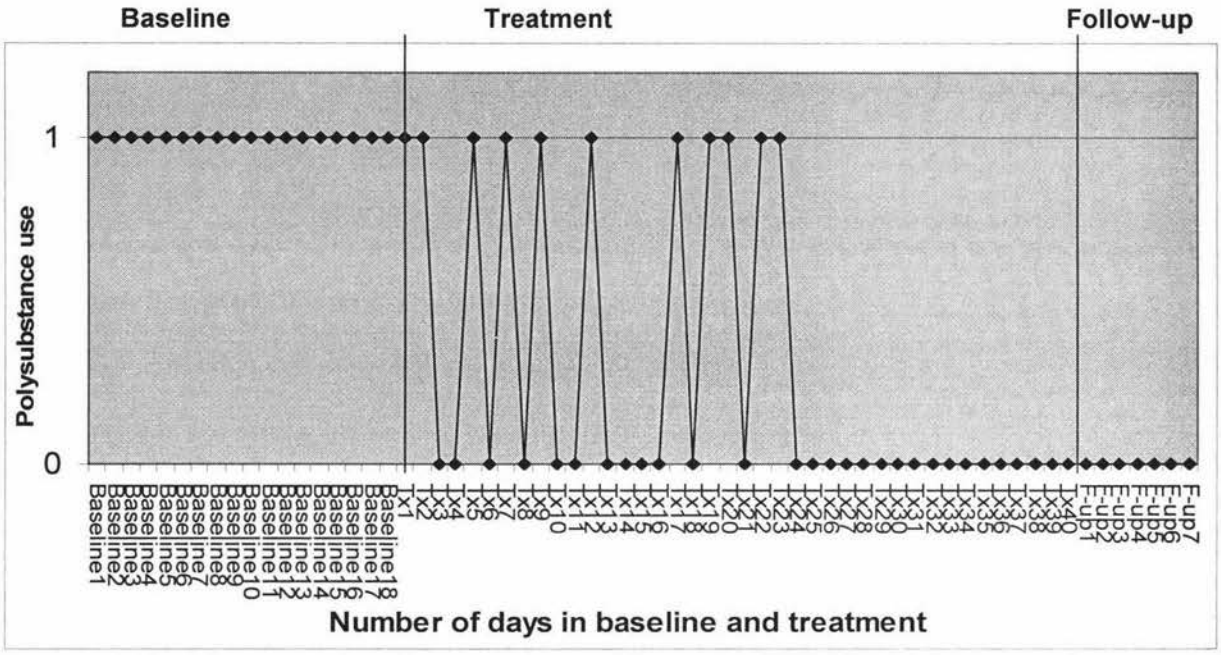

Figure 17. **Self-reported poly-substance abuse across baseline and treatment for participant 1.**

Note: Use of two or more substances in the one day = 1
Use of no substance or only one substance = 0

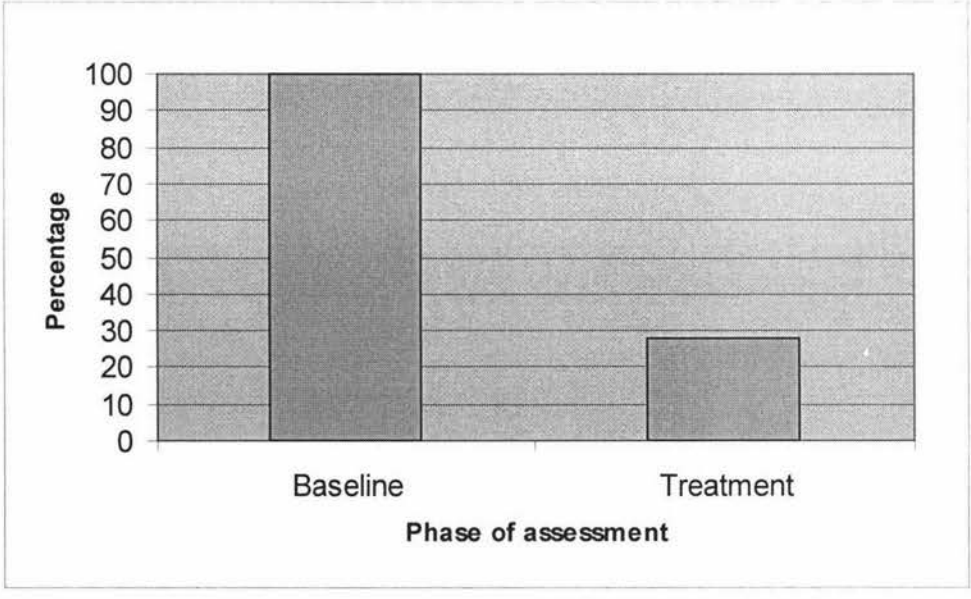

Figure 18. **Percentage of days on which poly-substance use occurred during baseline and treatment for participant 1.**

Participant Two (25 day pre-treatment baseline)

Participant 2 recorded his daily substance use throughout a twenty-five day baseline and throughout the forty days in the treatment programme. Participant 2 only used cannabis, and those results have already been presented in section 3.2, and repeated here. Additionally, participant 2 also applied the skills learnt in the programme to cigarette smoking and reported at post-treatment assessment that his use decreased from an average of twelve cigarettes per day to an average of eight cigarettes per day – a 33% decrease. These results were not formally assessed, and although participant 2 periodically attempted to record, for his own benefit, his use for one or two days, he did not regularly record his cigarette smoking.

As seen in Figures 19 and 20, participant 2 had a large reduction in his cannabis use from baseline to treatment. In fact he only reported using cannabis once during the forty days of treatment, after using cannabis on 36 percent of days during baseline (see Figure 20). However, he did report returning to cannabis use during the ten weeks post treatment, although at a much reduced frequency (fortnightly, as opposed to every second day). He used cannabis once during the sampled week at ten weeks post-treatment (see Figure 19).

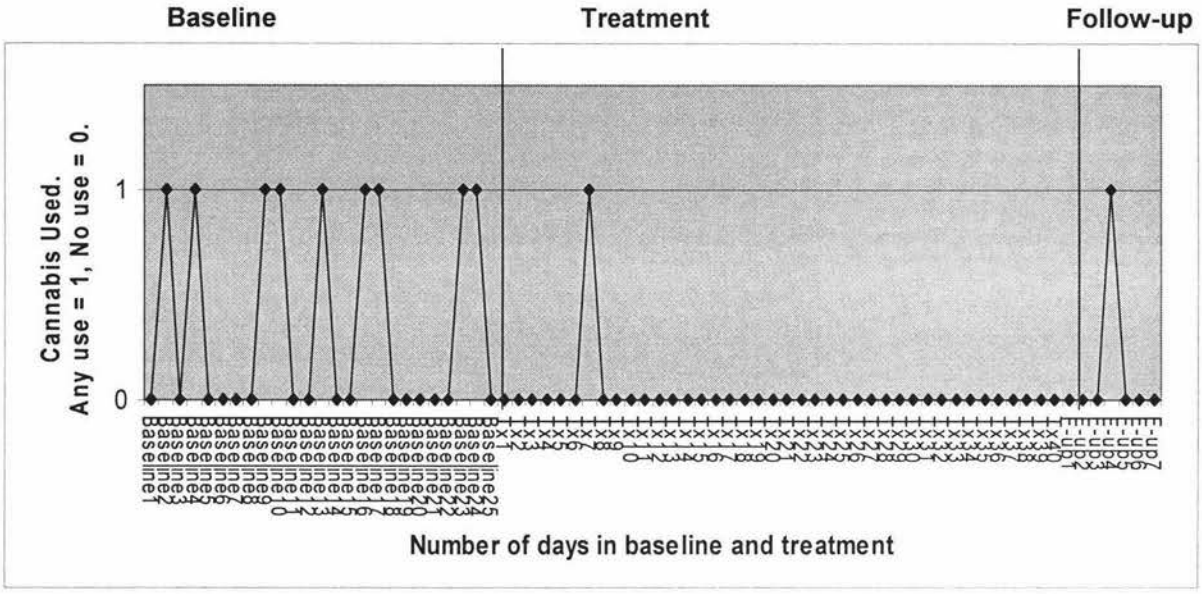

Figure 19. **Self-reported cannabis use across baseline and treatment for participant 2.**

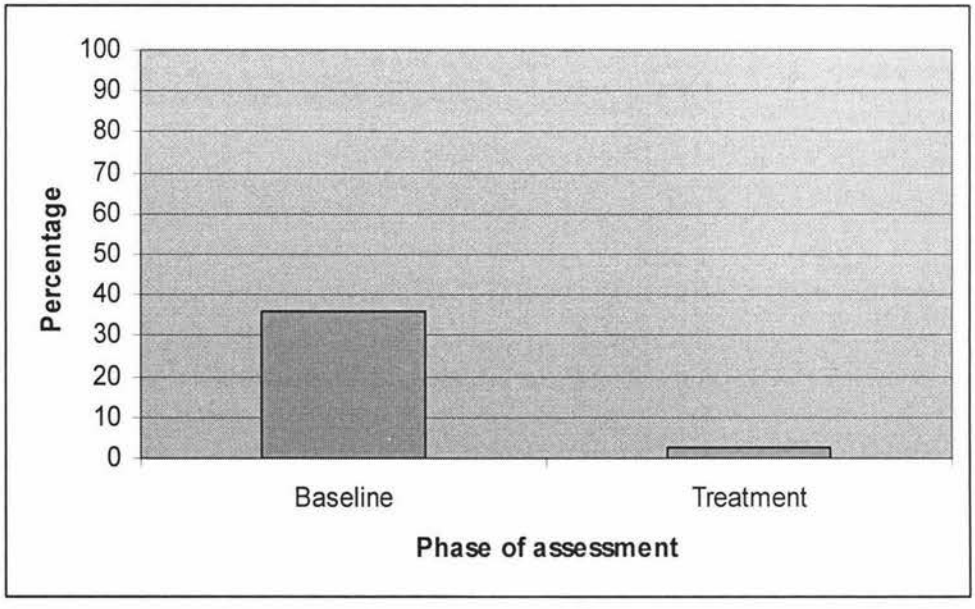

Figure 20. **Percentage of days on which cannabis use occurred during baseline and treatment for participant 2.**

Participant Three (30 day pre-treatment baseline)

Participant 3 recorded his daily substance use throughout a thirty-day baseline and throughout the forty days in the treatment programme. As well as cannabis use (Figures 21 & 22), participant 3 reported drinking alcohol regularly. His alcohol use across baseline and treatment are reported (figures 23 & 24). Alcohol and cannabis were the only substances used by participant 3, and he consumed both alcohol and cannabis concurrently on one occasion during baseline and on one occasion during treatment.

Participant 3's use of alcohol actually increased during treatment (from 6.25% of days during baseline, to 10% of days during treatment). However, he did not meet criteria for an alcohol use disorder at either pre- or post- treatment assessments, and he reported that his use was always on a Friday or Saturday night at a social gathering.

Participant 3 reported a slight decrease in cannabis use across baseline and treatment (23% of days during baseline, 20% of days during treatment). These results, and his alcohol use results, may have been influenced by the fact that a stable baseline was not established for participant 3, and he had a period of two weeks during which no substances were consumed during baseline – from days 18-30. He explained that this was owing to having "no cash" and that there had been "no parties" during this time, and reported that not using cannabis or alcohol for this length of time was unusual for him. Although participant 3 had a period of 26 days without using cannabis from day four of treatment onwards, his cannabis use increased again towards the end of treatment. The end of the school year was on day 30 of treatment, and although participant 3 came to the two remaining sessions, he expressed often that he was going to "have a last really good time" during the school holidays, in anticipation of "cutting down properly" when school re-started the following year. He reported having cut down again at the ten-week follow-up, and reported no cannabis use during the week sampled at ten weeks post-treatment.

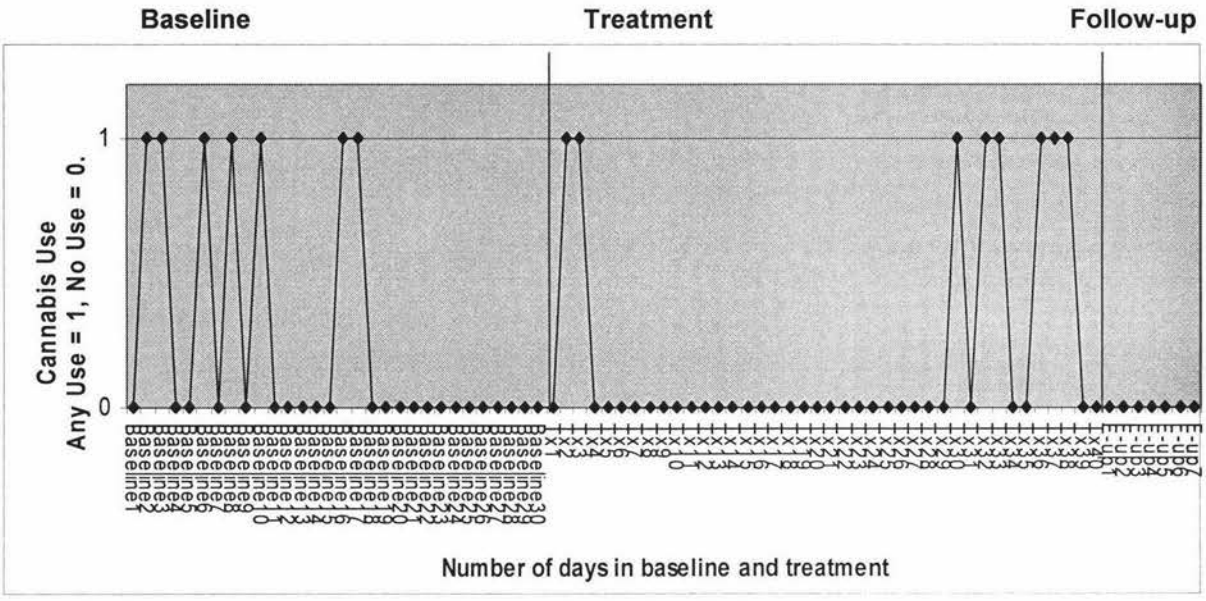

Figure 21. **Self-reported cannabis use across baseline and treatment for participant 3.**

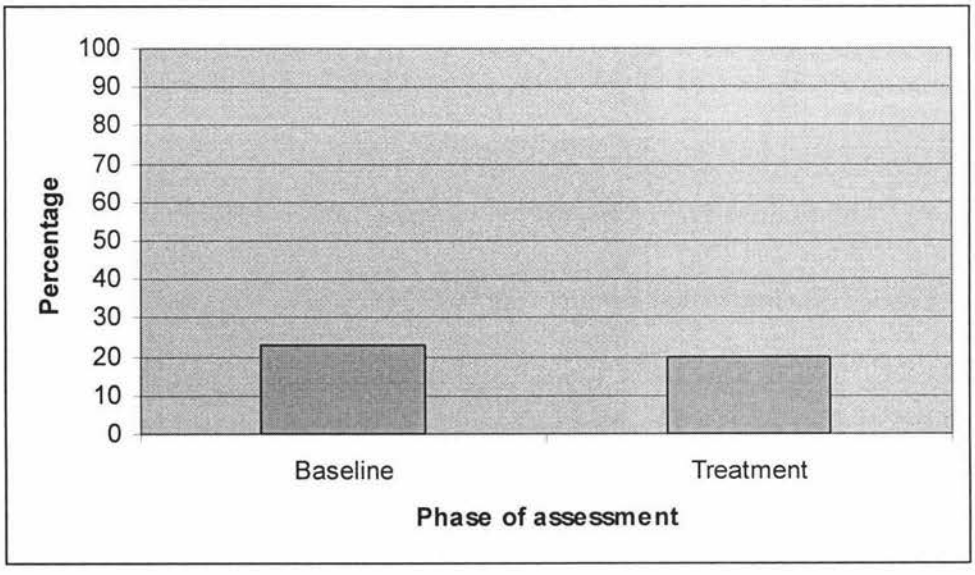

Figure 22. **Percentage of days on which cannabis use occurred during baseline and treatment for participant 3.**

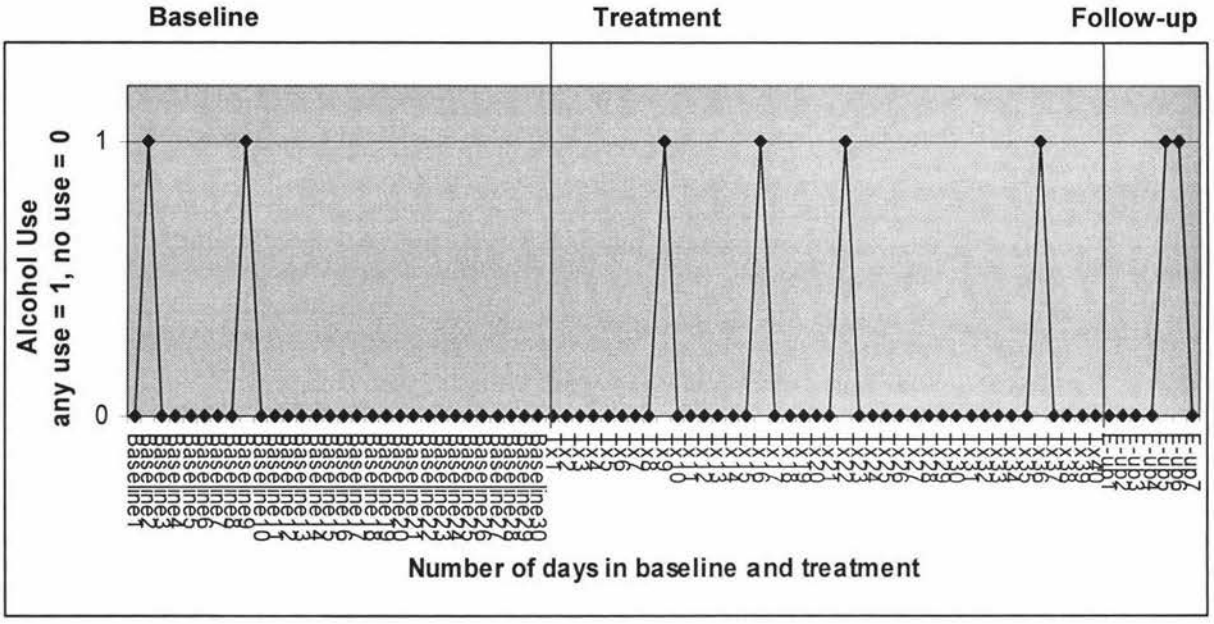

Figure 23. **Self-reported alcohol use across baseline and treatment for participant 3.**

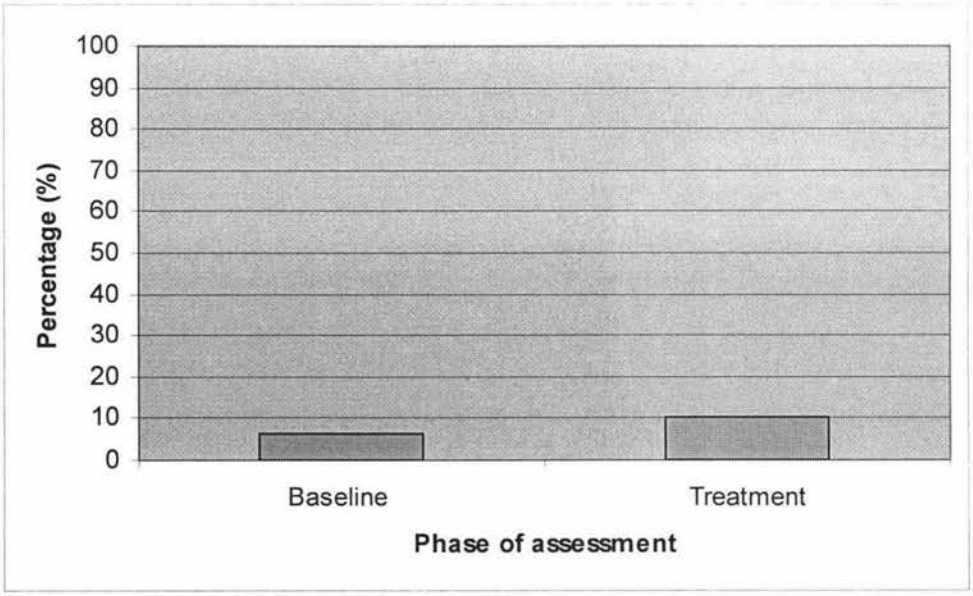

Figure 24. **Percentage of days on which alcohol use occurred during baseline and treatment for participant 3.**

CHAPTER 4. DISCUSSION

4.1 Summary of the Findings

The primary goal of the present study was to investigate whether a structured integration of motivational interviewing and brief cognitive behavioural therapy might be successful in treating substance abuse disorders with New Zealand adolescents. Overall, the results of the present study indicate that this is a promising approach. Harm minimisation, reductions in cannabis use and an increase in coping skills and self-efficacy were the most noteworthy positive outcomes for all participants. However, while the findings indicate promise, the intervention was not successful in 'treating' all the substance abuse or dependence disorders displayed by participants. Only one participant (participant 2) no longer had a substance use diagnosis at post-treatment, and he again met the criteria by the ten-week follow-up. However, this does not mean that the intervention was unsuccessful in meeting the goals of the study. In fact, as already stated, in terms of harm minimisation the intervention produced many positive outcomes. The first of these positive outcomes was a decrease in substance use.

The substance use data clearly shows that the intervention used in the present study resulted in all participants reducing their substance use while participating in the treatment programme. Use of a multiple-baseline design makes it less likely that these changes occurred due to other variables such as history and maturation. Two participants (participants 1 and 2) reported maintaining a reduction in use in the ten weeks post-treatment. Cannabis was the common substance used across all participants. Encouragingly, all participants reduced their use of cannabis throughout the treatment phase (albeit only marginally for participant 3). As already mentioned, only participant 2 achieved abstinence and no longer met criteria for a cannabis use diagnosis at post-treatment. However, participant 1 markedly reduced his use of other substances. He no longer used either amphetamines or inhalants at post-treatment, and remained abstinent from these substances during the ten weeks following treatment. Consequently, he no longer met diagnostic criteria for inhalant abuse, and was in full remission from his amphetamine dependence. This is important and significant, as inhalant use is a particularly dangerous form of abuse

(Doweiko, 2002). In fact, participant 1's pre-treatment use of substances was placing him at high risk of an accidental overdose and maybe even death. A large reduction in the number of occurrences of poly-substance use was also reported for participant 3 from baseline to treatment. This is also significant as poly-substance use greatly increases the harm that an adolescent may experience as a result of their substance use (Aarons et al., 1999). These changes were not present during the various baseline phases, but only occurred throughout the treatment process. The primary goal of the study was achieved and support was found for the main hypothesis, which was that the intervention would result in a reduction in substance use.

These results are similar to those reported in overseas studies evaluating cognitive behavioural therapy for adolescent substance abuse (e.g. Azrin et al., 1994; Kaminer et al., 1998; Waldron et al., 2001). The present intervention combined motivational interviewing and cognitive-behavioural techniques, and the findings here also match those of other recent research using a similar approach (Dennis, 2002). Similar to current findings, reviews of adolescent substance abuse treatment outcome have consistently found that only a minority of adolescents receiving outpatient treatment actually achieve abstinence by treatment completion (39-40%). However, on average, substance use during an intervention decreases to approximately 50% (range = 38%-62%) of pre-treatment levels (Williams & Chang, 2000). In this study, the average decrease in cannabis use across participants was to 52% of pre-treatment levels. The decrease in use of other substances by participant 1 ranged from 18%-44% of pre-treatment levels of use.

Further support for the intervention was provided by the results on measures of relapse coping skills, which indicate that the intervention substantially increased participant 1's and 3's ability to cope with high-risk situations involving drugs and alcohol. This is a particularly important outcome of the intervention as research has 'consistently found a relationship between self-reported coping responses and post treatment alcohol and drug use' (Myers & Brown, 1995, p40). Additional support was provided by indication of clinically significant change for participants 1 and 2 on some of the self-report measures. The clinically significant change that occurred for these participants on the Youth Self Report and the Personal Experience Inventory also provides support for the hypothesis that participants would experience a

reduction in problems related to their substance use. Where available, the parent report on the Child Behaviour Checklist also provides support for the intervention by demonstrating clinically significant change from pre-treatment to post-treatment. All participants also reported a decrease in the number of perceived benefits of alcohol and drug use. As scores on this scale are significantly related to several key indicators of drinking/drug use behaviour (Petchers & Singer, 1987), this also provides support for the intervention. However, the hypothesis that participants would move from pre-contemplation or contemplation, into the action stage of their readiness-to-change their drinking and drug use behaviour was not fully supported. All adolescents were already in the contemplation or action stage of the readiness to change model prior to beginning treatment. It may be that this intervention appealed to adolescents who were already contemplating change, due to the voluntary nature of the programme.

All three participants interacted with the intervention in different ways, and had various moderating influences on their participation, and their results. Some of these moderators, such as motivation and readiness to change, were formally assessed using various measures. However, other influences on the adolescents who participated in the study were not formally assessed and may have influenced the participants in a number of ways. For example, family connectedness and school connectedness have been shown to be correlated both to a reduced likelihood of developing a substance use disorder, and also more successful treatment outcome (Hawkins et al., 1992; Latimer et al., 2000). However, neither of these factors was assessed in the present study. Additionally, the peer context in which an adolescent operates has been found in some studies to be the most robust predictor of an adolescent's substance use (Hussong, 2002; Newcomb, 1995; Pagliaro & Pagliaro, 1996; Schulenberg et al., 2001). However, this too was not formally assessed. Family involvement in substance abuse treatment for adolescents has also been shown to increase the likelihood of positive treatment outcomes, but parent/family involvement was not standardised in the present study. Future research needs to examine these factors in more depth in relation to the effectiveness of the present study's treatment programme.

Overall, the results do demonstrate that the intervention was effective in producing change and minimising harm for the three young people who participated in the programme. However, the present study was not designed to evaluate which components of the programme were responsible for the success of the intervention. Future research is needed to clarify the effectiveness of specific aspects of the programme. The programme has potentially beneficial clinical applications, and effected change in a relatively brief period of time. It is also likely to be relatively easily disseminated to practitioners due to the manualised format. The fact that it has demonstrated some effectiveness when carried out in a school setting also has implications for future utility.

This study formed the pilot for a larger, group comparison evaluation, and has indicated the worthiness of continued study into the intervention's effectiveness as a tool to use with adolescents who have substance use disorders. The two main implications for the larger study are: a) an increased focus on participant variables that may moderate treatment effectiveness, in particular age, gender, ethnicity, comorbidity and motivation; and b) the inclusion of component analysis to determine which components of the treatment programme were active in bringing about change. It will also be important that future research explore the interventions effectiveness in standard care settings.

4.2 Interpretation and Implications for theory, research, and practice

The findings of the present research add support to the growing body of recent literature that indicates combinations of motivational interviewing and cognitive-behavioural therapies are efficacious in reducing adolescent substance use (e.g. Dennis, 2002). The therapy used in the present study focused specifically on a non-judgmental, client-focused, motivational interviewing style of therapy, aimed at moving adolescents through the stages of change and increasing their motivation to change their substance use behaviour. At post-treatment, all participants reported to the independent assessor that this non-judgmental aspect was one of the things they enjoyed the most about the intervention: Participant 1: "It was good to have someone who listened, who didn't just say 'drugs are bad'." Participant 3: "It was good to have someone non-judgemental to talk to."

Consistent with cognitive-behavioural therapy, the treatment also focused on assessing the antecedents and consequences of substance use behaviour and targeted erroneous thinking and decision-making around use of substances. The combination of motivational interviewing and cognitive-behavioural therapy led to reductions in substance use and improvements in functioning for all participants. This section breaks down the different areas that the treatment sought to effect change in, and examines the implications that these findings may have for theory, research and practice.

Cannabis, alcohol and other drug use

"I like the taste." (Mark, 15)

The primary hypothesis of the study was that participation in the treatment programme would result in the adolescents reducing their substance use, and this clearly occurred. Visual inspection is the primary means of data evaluation in single case methodologies (Kazdin, 2003), particularly where continuous data is available, such as in the present study. A visual inspection of the results clearly demonstrates that the intervention influenced the substance use of participants 1 and 2. Both participants reported a marked reduction in the number of days on which they used

substances once the treatment phase began. This decrease in substance use can be clearly seen across the multiple baselines in Figure 4 for cannabis use, and also in Figures 9 - 16 for participant 1's other substance use. The use of a multiple baseline design meant that it was less likely that these changes occurred because of non-treatment related variables. A reduction in use also occurred for participant 3. However, it cannot be as certain that it was the intervention that influenced his period of abstinence from cannabis. As he also stopped using substances for a period of two weeks at the end of the baseline phase, it may be that variables other than the treatment programme influenced his substance use behaviour. However, anecdotally, participant 3 did report that whereas it was "no money" that influenced his abstinence during baseline, it was the intervention that influenced his period of abstinence during treatment. He set a goal in the second session of therapy to not use cannabis for the remainder of the school term, "to see if I can". When the school holidays began (on day 30 of treatment), he returned to his past level of use, stating that he wished to "cut down properly next year for fifth form", but to "enjoy the holidays first". He also stated that as a result of the programme he felt more in control of his use and at post-treatment stated "I know what to do now when I stop next year". Additionally, at the 10-week follow-up, he reported that he was using the support materials from the intervention to meet his goal of stopping now that the school term had started. He also reported not using any cannabis in the week sampled at ten weeks post-treatment.

In terms of overall substance use severity, all the participants were more than one standard deviation above the high school mean at pre-treatment for the majority of basic and clinical scales on the Personal Experience Inventory, indicating that their pre-treatment involvement with substances was relatively severe. Participant 1 was the most involved with substances both in terms of the variety and amount of substances he was using, and also his level of dependence. Consequently, participant 1's reduction in substance use was overall the most impressive in terms of harm minimisation. Participant 1 was in early partial remission for his amphetamine use at post-treatment (had been abstinent for at least one month, and was experiencing some symptoms, but not enough to qualify for a substance dependence disorder). At the ten-week follow-up participant 1 was in full remission for his amphetamine dependence diagnoses, and also no longer met criteria for

inhalant abuse. As mentioned previously, these findings are important and significant, as inhalant use is a particularly dangerous form of abuse (Doweiko, 2002). Participant 1's pre-treatment use of substances was placing him at high risk of an accidental overdose and maybe even death. A large reduction in the number of occurrences of poly-substance use was also reported for participant 3 from baseline to treatment. This is also significant as poly-substance use greatly increases the harm that an adolescent may experience as a result of their substance use (Aarons et al., 1999).

Only participant 2 went from having a substance use diagnosis at pre-treatment to having no diagnosis at post-treatment. He was abstinent from day 8 of treatment onwards. However, he had returned to using cannabis by the 10-week follow-up, albeit at a much-reduced level. His return to some level of substance use is consistent with other research that has shown adolescents who achieve abstinence typically return to substance use within a relatively brief time (approximately 2 months) of completing treatment (Cornelius, et al., 2003). Consequently, participant 2 did meet the criteria for substance abuse again at the ten-week follow-up, although his reported level of use was not nearly as high as at pre-treatment. In fact, he was visibly upset (tears in his eyes, reported feeling 'gutted'), when interviewed by the assessor at post-treatment. He reported that he had only been using cannabis approximately once a fortnight in the ten weeks post-treatment, compared with an average 4-5 times a week during baseline. However, on one occasion he had gone out to smoke a cigarette (nicotine) on the school field at lunchtime, and had been offered a joint by a friend. He was caught smoking it by the Deputy Principal, and permanently excluded from school. Despite the best attempts of the intervention, and the participant, another risk factor (that of not finishing high school) has been added to participant 2's life. The six-month follow-up will be informative as to how this turn of events affects participant 2's use of substances in the long term.

It was predicted that the intervention would have an effect on all of the substances that adolescents were using; however, this was not the case. Alcohol use does not appear to have been as successfully reduced as other substances. Although participant 1 did reduce his use of alcohol in terms of percentage of days on which he drank (see Figure 7), it was the lowest reduction of all of his use (56% of pre-

treatment levels), and from the pattern of data displayed, it is clear that he continued to use alcohol on a fairly regular basis during treatment. Additionally, participant 3's use of alcohol actually increased during treatment with him reporting, "I drink more [alcohol] now, instead of smoking [a joint], especially at parties". This does need to be viewed in context however, as participant 3 did not meet criteria for an alcohol use disorder, and therefore did not have alcohol use as a specific focus of treatment. However, social norms that are favourable to drug use have been shown to be predictors of substance abuse (Beman, 1995; Hawkins et al., 1992). Between 94 and 99% of 14-17 year old New Zealanders report that they have tried alcohol 'at some stage' (Kalafatelis & Fryer, 2001), and use of alcohol at the weekend was certainly viewed as normal by all participants in the present study. A recent survey of New Zealand secondary school students (n=9,699) showed that 41.1% of male adolescents reported an episode of binge drinking (drunk 5 or more alcoholic drinks within four hours) within the past four weeks (Adolescent Health Research Group, 2003). The replacement of other drugs with an increase in alcohol use is an area in which further research would be useful. It may be that the lack of reduction in alcohol use in the present study is related to the normalisation of alcohol use in the New Zealand adolescent culture and/or the participants' motivation and readiness to change in that area.

Of the three participants, the participant whose substance use was the most severe (participant 1, with three dependence diagnoses and a baseline of daily substance use), and the least severe (participant 2, with one substance abuse diagnosis), reported the most reductions in use. Participant 3's baseline percentage of use was the least, although he did qualify for a substance dependence disorder. He reported very little overall change in terms of percentage of use in each phase of assessment. Visual examination of participant 3's reported cannabis use does show a reduction in use following the beginning of treatment, however, as discussed, other variables influenced his substance use throughout both baseline and treatment. It is possible that the severity of the substance use problem may have interacted in a variety of ways with all of the adolescent's readiness to change their substance use behaviour, which in turn may have affected the results. This is discussed further in the following section.

Motivation and readiness to change

"It only works if you want it to." (Mark, 15)

As is common in interventions for substance abuse (Miller & Rollnick, 1991), the intervention used in this research aimed at moving the participants through the stages of change, from pre-contemplation through to action, through the use of motivational interviewing techniques. The intervention appears to have been marginally successful in this regard. The motivation the participants felt to change their substance use behaviour, as measured by their readiness-to-change scores, fluctuated throughout the course of both baseline and treatment. However, their scores on the readiness-to-change questionnaire indicate that all participants were already contemplating change, and even perhaps making some effort to change their substance-related behaviour. In particular, this was noted throughout the baseline phase for their common substance of concern – cannabis.

As introduced earlier, the nature of the research project may have meant that it appealed to participants who were already contemplating change. Involvement in the research was completely voluntary and the adolescents involved were all free to withdraw without penalty at any time. As readiness to change has been positively associated with both treatment completion and treatment outcome in adolescents (Aubrey, 1998; Melnick et al., 1997), this is likely to have affected the participant's engagement with treatment independent of the motivational interviewing component of the treatment. It also means that the three participants involved in this study are not necessarily representative of the clinical, or high school, adolescent populations who would normally come into contact with alcohol and drug services.

As previously mentioned, it is possible that there is a connection between severity of use and motivation to change the substance use behaviour. In the present study, the number of negative consequences the three participants had experienced as a result of their substance use appears to correlate with their self-reported level of motivation. Participant 1's use of substances was the most severe in terms of frequency of use, and number of substances used. He was also experiencing a wide range of problems related to his use. He experienced visual hallucinations on a fairly

regular basis, and had headaches and a bleeding nose after using inhalants. He had also been in trouble with the police on a number of occasions through his use of substances. These are fairly negative consequences, and it is reasonable to assume that they influenced his motivation to change his behaviour.

Participant 2's use of substances was the least severe, in that he only qualified for one substance abuse disorder. However, he too had experienced fairly negative consequences of his use. He had been excluded from a previous school when caught selling cannabis to his classmates. He had stolen the cannabis from his father, and as a result, his father was charged with growing and dealing. This affected their family circumstances very adversely, and was a huge motivating factor for participant 2. In contrast, participant 3, whose motivation to change was the least, reported experiencing very few negative consequences of his use. In this regard, participant 3 is perhaps more representative of the general adolescent substance using population. Research has shown that adolescents who use substances often perceive themselves to have experienced few overall negative consequences (De Leon & Deitch, 1985, cited in Spooner et al., 1996). The use of group factorial designs in future research may shed more light on the implications of this for the present study's treatment programme.

Research has shown that stage of change is a strong predictor of changes in substance use at six-month follow-up, even when other predictors have been taken into account (Heather, et al., 1993). In the present study, as in previous research (e.g. Monti et al., 1999, 2001), it would appear that motivation to change might have influenced the success of the intervention. Participant 2, who clearly moved into the action stage in his readiness to change his cannabis use from session two onwards, was the most successful at reducing his use. By contrast, participant 3, who remained at the determination/preparation stage throughout the entirety of all phases of assessment, reduced his substance use the least. This is consistent with other findings linking readiness to change with successful treatment outcome (Melnick et al., 1997). In terms of readiness to change their alcohol use behaviour, participants 2 and 3 remained precontemplative throughout all phases of assessment. However, these findings must be viewed in context. Participant 2 drank no alcohol during either baseline or treatment. Consequently, his results are unlikely

to be representative of pre-contemplation in the stages of change model but rather an accurate representation of a person who does not have an alcohol use problem. While participant 3's use of alcohol actually marginally increased throughout the treatment phase he also did not meet diagnostic criteria for an alcohol use disorder.

Perceived benefits of drinking and drug use

"Having a session makes everything better and less boring" (Mark, 15)

It was predicted that the number of benefits each participant perceived drugs and alcohol to have would decrease, and this did occur. All participants' perceptions of the benefits they received from drinking alcohol or using drugs decreased throughout the treatment phase. The one exception was participant 3, who perceived alcohol to have only two benefits across all phases of assessment. Scores on the PBDS have been found to be significantly related to several key indicators of drinking and drug use behaviour: Frequency of being drunk/high, presence of problems related to drinking/drug use, and to the presence of trouble related to drinking/drug use (Petchers & Singer, 1987). Consequently the decrease in perceived benefits reported by the participants in the present study is an indicator that their self-reports of a reduced frequency of substance use are accurate.

However, the reductions in number of benefits were small. The use of a motivational interviewing style of therapy may have affected participants' reported perceptions. For example, in motivational interviewing participants are at no time told that drugs or alcohol do not have beneficial consequences. The focus of the present intervention was on harm minimisation. This differs from many psycho-educational programmes that adopt a 'drugs are bad' and 'just say no' type of approach. In the present study, participants were guided to discover for themselves that alongside the beneficial consequences lay negative consequences. It was then hoped that the young person would see these negative consequences as outweighing the positive consequences. A tenant of motivational interviewing is to give the client clear, accurate information and them let them make their own choices (Miller & Rollnick, 2002). It may well be that measuring the perceived benefits of drinking and drug use

did not measure the construct accurately. Instead of monitoring the number of perceived *benefits* it may have been more accurate to measure whether an increase in perceived *detrimental effects* of alcohol and drug use occurred. Future research could investigate whether an increase in perceived detriments occurs alongside the relatively stable beliefs about perceived benefits. It may be that an increase in detrimental perceptions is a factor that influences the decision to change.

Substance related emotional and psychosocial problems

"I got snapped selling tinnies and got excluded."
"Where'd you get the tinnies from?"
"I stole them from my dad..." (John, 14)

"I see ants crawling across my bed in the morning –
I know they're not real, but I see them." (Matthew, 15)

It was hypothesised that reductions in substance use would also result in a reduction in the problems associated with that use. Findings here are mixed. All three participants indicated a number of problems related to their substance use, as evidenced by their scores on scales of the Personal Experience Inventory. Participant 1 reported the highest level of involvement with substances. He also had the most personal risk factors in terms of family estrangement, uncontrolled behaviour, and the need to reject convention, all of which are predictors of poor treatment outcome (Latimer et al., 2000; Williams and Chang, 2001). However, Participant 1 also appears to have benefited the most from the intervention in terms of reduction of psychosocial problems related to his use.

At pre-treatment, participants' 2 and 3 reported less involvement with substances and did not demonstrate as many personal or environmental risk factors as participant 1. Interestingly, while the other two participants reported few or minor improvements in their psychosocial functioning, participant 1 reported improvements in every area of his life at the ten-week follow-up. He had dropped to within a non-clinical range on almost every scale of the Personal Experience Inventory, including family estrangement, despite the fact that his family was not involved with his

treatment. It is, of course, always possible that factors other than the treatment programme resulted in the improvements seen in participant 1 at the ten-week follow-up. However, anecdotally, participant 1 himself attributed the improvements in his life to the intervention, and the changes he had chosen to make as a result. He reported at the ten-week follow-up: "It's going really well, eh, I'm meeting all my goals, and still using all that stuff [in-session and practise worksheets and handouts]. Everything is better."

Clinically significant change was also indicated for participant 2 on two scales: 'negative self-image', and 'deviant behaviour'. The most significant change was his 'negative self image' score. It was 62 (clinical) at pre-treatment, but had dropped to 48 (normal) at post treatment, and was 43 by the ten-week follow-up. This may be tied into the increased coping skills that the cognitive behavioural intervention aimed at developing, and which all participants reported at post-treatment and follow-up. Future research could focus on further exploration of the effects that the intervention has on the participants' perceptions of themselves. It is possible that the non-judgmental nature of the intervention also contributed to his increased positive feelings about himself.

Participant 3's results on the PEI did not indicate that any clinically significant change had occurred in terms of his functioning. This supports the hypothesis that a reduction in use would result in a reduction in problems associated with that use. Participants' 1 and 2 reduced their substance use substantially, and consequently reported a decrease in problems and an increase in functioning. Participant 3, whose substance use reduced the least, reported the least improvement in functioning. This is consistent with other research showing that reductions in substance use are accompanied by reductions in problems associated with that use (Project MATCH research group, 1997).

The intervention used in the present study focused on increasing cognitive and behavioural skills. It was expected that an increase in skills would result in an equal increase in the participants emotional and behavioural functioning, as assessed by both the Child Behaviour Checklist and Youth Self Report. Many studies have demonstrated the CBCL and Youth Self Report's sensitivity to treatment-related

change (Achenbach, 1999). As with the psychosocial improvements, the intervention appears to have had positive effects on the emotional and behavioural functioning of the participant (participant 1) who's emotional and behavioural functioning were most in need of improvement. Participant's 2 and 3 again reported few or no improvements, although it is important to note that their pre-treatment level of functioning was also much less elevated than participant 1's.

Participant 1 was in the high clinical range for his externalising and total T scores at pre-treatment on the Youth Self Report, and these had decreased to within a non-clinical 'normal' range at post treatment, and remained so at the ten week follow-up. Of particular note is the effect the intervention, or more specifically, the reduction in substance use, appears to have had on participant 1's score on Scale V (thought problems), on the Youth Self Report. This dropped from a T score of 90 (clinical) at pre-treatment to a T score of 50 (within the normal range) at post-treatment, and remained within the normal range at the ten-week follow-up. It is reasonable to assume that this decrease in thought problems was a direct result of participant 1's decrease in substance use. It is probable that his dependence on three substances was resulting in the visual hallucinations and feelings of paranoia reported at pre-treatment, which then stopped after he reduced his intake. Unfortunately participant 1's parent did not return any post-treatment assessments. It would have been interesting to see if participant 1's scores on the Child Behaviour Checklist had also dropped to within normal levels post-treatment, corroborating his self-report.

Participant 2 was in the non-clinical range on the Youth Self Report for all scales at pre-treatment and remained so at post treatment and at ten-week follow-ups. This indicates that his emotional and behavioural functioning were within the 'normal' range for adolescent males his age as he began treatment, and remained so throughout treatment and follow-ups. Participant 2's father, the only parent to return post-treatment assessments, reported an improvement in functioning across all domains (internalising and externalising) from pre- to post-treatment on the Child Behaviour Checklist for participant 2. Future research, which will hopefully be more successful in collecting parent measures, may show that other parents also report beneficial effects. This would in turn provide additional support for the effectiveness of the programme.

Relapse prevention and coping skills

"I know what to do now" (Mark, 15)
"I feel heaps more in control! I'm meeting all my goals" (Matthew, 15)

It was hypothesised that the focus on skills training as a major component of the intervention would result in participants increasing their relapse coping skills. The results here were the most universally positive. All participants were able to identify a wider variety of coping skills post-treatment, and identified a wider range of strategies that they said they would employ in order to not use drugs or alcohol. They also reported feeling much more confident about their ability to cope with situations involving drugs and alcohol. At ten weeks post-treatment all participants anecdotally reported even greater confidence in their ability to cope than they did immediately after treatment completion, and their results on the Adolescent Relapse Coping Questionnaire support this. However, this increase in coping skills was not as evident in participant 2. Participant 2 began with a greater level of coping skills and identified a much wider range of coping strategies at pre-treatment than did participants 1 and 3. His score on the ARCQ was double that of participant 1's at pre-treatment, and also much greater than participant 3's. At post-treatment all 3 participants were roughly equal (range of 95-104), while by the ten-week follow-up, participants 1 and 3 had surpassed participant 2. However, although the *increase* in coping skills was most noticeable in participants 1 and 3, all three participants were able to identify, and report to be able to use, a wide range of coping skills and strategies when faced with a situation in which they were offered drugs and alcohol.

It remains to be seen as to whether this will have enhanced their long-term relapse prevention skills. Whether the increase in knowledge of the skills translates into actions is hard to gauge – this may be related to factors discussed already, such as motivation. Long-term follow-ups, such as the scheduled 6-month and one year follow-ups, may be informative in this regard. Additionally, previous research into relapse prevention has shown that high scores on the Adolescent Relapse Coping Questionnaire do translate into an increased likelihood of maintaining goals achieved during treatment (Myers & Brown, 1995). In fact, various studies to date

have 'consistently found a relation between self-reported coping responses (on the Adolescent Relapse Coping Questionnaire) and post treatment alcohol and drug use' (Myers & Brown, 1995).

Preliminary support is provided by the fact that participant 1 had maintained abstinence from amphetamines and inhalants during the ten weeks post-treatment. Additionally, both participants 1 and 2 had maintained a reduced level of cannabis use in the ten weeks post-treatment. Encouragingly, Participant 3 reported at the ten-week follow-up that he was also utilising the coping skills taught in the programme to attempt a further reduction in his cannabis use.

4.3 Limitations of the present study

Many of the limitations in the present study are related to the single case methodology. Three participants, even within a multiple baseline across participants design, is simply too small a number to generalize from. Consequently the results must be viewed as a preliminary indication only. However, this lack of generality is not unique to single case experimental designs. Kazdin (2003) points out that findings in single case experiments have no less generality than findings from between-group research. In fact it can be argued that 'potent... effects from the single case are likely to generalise more broadly than are [group] interventions that may meet the relatively weaker criterion of statistical significance' (Kazdin, 2003, p.290).

However, the single case experimental design is weak in revealing characteristics that may interact with or moderate the effects of treatment. The participants in the present study are a very prescribed sub-group of the highly heterogeneous group that are adolescent New Zealanders: they were all males, all were fourteen or fifteen years of age, and all were attending high school. Therefore the findings cannot indicate whether or not gender or age has any effect on the efficacy of the treatment. It also may be that whether or not the adolescents are attending high school is a mediating factor. Additionally, it may be that ethnicity moderates outcomes. It is also probable, as mentioned in previous sections, that the participants' high levels of readiness to change their cannabis use behaviour moderated the treatment effects. The only way that moderating variables can be assessed is through group research, specifically factorial designs. Future research into this intervention will benefit from use of a group design, as the greater number of participants may highlight any moderating factors.

It is unclear whether the three adolescents who participated in this study are in any way representative of typical referrals for drug and alcohol treatment. Although all three participants met diagnostic criteria for a substance use disorder, they were all still in school and functioning at a relatively high level. In fact, it is unlikely that participants 2 and 3 would ever have been seen for treatment had this research not been carried out in their schools (personal communication with participants parents,

October, 2002). Consequently, it was not established whether or not the findings of the present study are likely to be generalised to standard clinical settings.

A further limitation in regard to the treatment's effectiveness in standard care settings is that its efficacy with dually diagnosed adolescents has not been studied. Forty-two percent of New Zealand adolescents who meet the diagnostic criteria for a DSM-IV substance abuse/dependence diagnosis also meet the criteria for at least one other disorder (Horwood & Fergusson, 1998). The participants in the present study were excluded and referred to other services if they had an evident comorbid disorder. Consequently, it is unclear as to whether the present intervention will be successful with dually diagnosed adolescents. Given that adolescents who suffer from comorbid disorders are at much greater risk of non-response to treatment (Zeitlin, 1999), it is essential that this is investigated in future research.

Another related limitation is that the present study has not assessed the effectiveness of the intervention under normal conditions of treatment delivery. It has been reported that research-based interventions can produce different treatment outcomes to service-based interventions (Weisz, Weiss, & Donenberg, 1992). The present findings demonstrate the relative efficacy of the treatment in a controlled trial. As such, the treatment was subject to comprehensive treatment fidelity checks that are unlikely to be present in 'real world' applications of the programme. Additionally, the fact that the treatment intervention was recommended to potential participants as a research-based treatment, that utilised a highly successful treatment intervention, may have produced a greater expectation of successful outcome than is usual, in both therapist and participant. As already discussed, it is important that additional controlled trials are carried out to establish moderating variables. However, it will then be very important to conduct effectiveness studies to determine whether similar effects occur under 'real-world' treatment conditions, as recommended in the literature (Morgenstern, Blanchard, Morgan, Labouvie, & Hayaki, 2001).

Another limitation is that for most of the assessment battery, self-report measures were used, leaving the results open to under- or over- reporting. In future research, use of urine testing as corroborating evidence may be useful, and is suggested in the literature (Williams & Chang, 2000). A further limitation of the present study is that, although a large assessment battery was used, not all of the variables that correlate with adolescent substance use or successful treatment outcome were assessed. In particular, peer relationships were not formally assessed. The peer context in which an adolescent operates has been found in some studies to be the most robust predictor of an adolescent's substance use (e.g. Hussong, 2002). Additionally, research into the characteristics of adolescents at substance abuse treatment entry (Latimer, et al., 2000), found that having non-substance using friends was a clear protective factor, and resulted in better treatment outcomes. A formal evaluation of the participants peer relationships or contexts may have resulted in additional relevant findings.

Attrition rates also confound the study's results. The present study had a treatment non-completion rate of 62.5%. This corresponds with treatment retention in other studies into adolescent outpatient treatment for substance abuse (Hser et al., 2001). However, as retention in treatment is a strong predictor of positive outcome, it is also a potential source of bias. Of the eight adolescents who began assessment and treatment in the present study, only three participants completed treatment. The three who remained in treatment may have interacted with the treatment in a different way to the young people who did not complete the assessment and treatment. For this reason, the literature on treatment outcome research suggests that data collection should include all clients who are assessed and referred for treatment, regardless of whether they drop out of treatment. Outcome assessment of only the select group of patients who comply with or complete treatment can undermine the validity of the results (Lavori, 1992). Using a larger sample, and obtaining data from all referred participants, regardless of whether or not they complete therapy, may demonstrate whether this is a mediating factor. It may also demonstrate more convincingly that it is the intervention that is producing the change.

A further limitation is to do with the structure of parent/family involvement in the treatment process. The goal of the present study was to investigate the intervention as an individual-focused treatment, with the involvement of family members in one session. However, only participant 2's family participated in the treatment, and this may have presented a confounding variable. Involvement of family in therapy has been shown to increase the effectiveness of treatment with adolescents (Cormack & Carr, 2000; Weinberg et al., 1998). Despite efforts to include them, the level of family involvement in the present study was, as stated, relatively negligible. It was left up to the discretion of the adolescent participant as to whether they invited support people to the session that consisted of developing a support and coping plan (session 7). Consequently only participant 2 had a parent attend. Participant 1 invited a friend to his 'support people' session, while participant 3 chose to involve no support people. The fact that participant 2's father was involved in his treatment may well have been the moderating factor that resulted in him achieving abstinence. However, this was not formally assessed and much more research needs to be done in this respect.

The final limitation of the present study was its inability to determine which components of the treatment programme were active in bringing about change. The present intervention was a multifaceted one in that it combined two specific, well-researched treatment methods. For example, treatment components in the present intervention included rolling with resistance, goal setting, skill rehearsal, functional analyses of substance use situations, and problem solving skills. It is unclear as to what the relative contribution of each of these techniques was. It will be a complicated task to tease out those components that were the most effective in bringing about change. However, it is important to discover these 'active ingredients' so that the intervention can be streamlined and developed to effect change even more efficiently.

4.4 Recommendations for future research

The present study is part of the pilot study for a larger, group comparison evaluation. Consequently, the recommendations for future research are specifically aimed at providing information for the future research already planned. The recommendations are aimed both at overcoming the limitations of the present study, and at extending the field of study.

The first recommendation is that future research uses larger sample sizes, and incorporates group comparison and factorial designs. Randomised controlled trials are needed so that moderating characteristics may be discovered and the intervention can be systematically compared across multiple subjects who differ in various characteristics, in particular gender, age, ethnicity and comorbidity. It would also be useful to include measures of important variables that were not assessed in the present study, such as peer contexts. Specifically, using an assessment instrument such as the Missouri Peer Relations Inventory (Bouduin, Blaske, Cone Mann, & Hazelrigg, 1989) may yield further useful information.

Secondly, future research needs to examine which components of the present intervention are necessary for therapeutic change. As mentioned, it will be a difficult task to tease out which components of the treatment were the active ingredients. However, this is recommended so that the intervention can be streamlined and made even more effective and efficient in bringing about change. It would also provide useful insights into what works with New Zealand adolescents. This information will in turn be useful to the further development of adolescent substance use interventions.

Thirdly, the intervention's effectiveness in standard care settings needs to be assessed. A number of questions need answering prior to the treatments effectiveness and usefulness being conclusively pronounced. The first of these is whether the intervention produces the same results when used by practitioners who usually work with young people who have drug and alcohol use disorders. This may include practitioners who work in District Health Board (DHB) - based alcohol and drug treatment programmes, or private practitioners/counsellors in the field. The

potential of the intervention as a secondary prevention strategy also needs investigation. For example, could community social workers, youth workers and high school guidance counsellors carry out this programme effectively? Additionally, would the intervention work with youth who are beginning to have problems with drugs/alcohol, but do not yet meet severity criteria for DHB-based intervention? These issues influence the potential clinical utility of the intervention, as outlined in the next section, and are important avenues for future research.

Fourthly, it will be important for future research to consolidate and explore further the findings of the present study. In particular, the relationship between perceived *benefits* of drinking and drug use, and perceived *detrimental* effects of drinking and drug use, as mentioned earlier on in the discussion. Additionally, the present study seems to indicate a relationship between motivation/readiness to change, and subsequent treatment outcome. This relationship has implications in terms of component analysis. It will be important to discover if, as predicted, it is specifically the motivational interviewing components of therapy that result in an increase in motivation. If so, this could have implications in regard to treatment provision. For example, it may well be worth investigating the possible appropriateness of including more specifically motivational interviewing sessions at the beginning of treatment with adolescents who demonstrate less motivation.

Further investigation into the role that parental involvement plays in the treatments effectiveness would also be beneficial. Prior research has demonstrated that involving family in the therapy results in an increase in positive treatment outcome (Weinberg, et al., 1998). On one hand, a great deal of scope is available to involve parents and family more in the present intervention. However, on the other hand, as discussed in the introduction, effective individual treatments are also necessary. This is so that young people whose families are unable or unwilling to be involved in the treatment process can still receive empirically supported treatment. It is recommended that the intervention under investigation in the present study is adapted slightly for future research so that family involvement in session 7 is either mandated, or eliminated. As it stands, optional family involvement results in a confounding variable being added to the investigation. Alternatively, future research could also specifically investigate the variable of family involvement by utilising a

group comparison design. One group could be involved in a solely individual-based treatment, the other in a mandated family involvement intervention.

In terms of future research directions to extend the field of study, expanding the intervention to involve specific cultural components is another area that could be potentially be very beneficial. 32.5% of New Zealand high school students identify with more than one ethnic group (Adolescent Health Research Group, 2003). It is important that substance abuse interventions are culturally appropriate and fit with New Zealand's culture, both youth culture and different ethnic influences, in particular kaupapa Maori. Just as it is not necessarily appropriate to simply apply adult treatments to adolescents, it is not necessarily appropriate to simply import interventions from overseas and expect them to work effectively with New Zealand adolescents. The present study has modified existing interventions so that they have a specific adolescent focus, and has been successful in producing change. However, it is possible that even more effective change may be brought about by modifying the intervention further to include cultural components specific to New Zealand. Specific suggestions as to how cultural components could be incorporated into the present intervention are beyond the expertise of the researcher in this study. However, this is definitely a potential area of future development and investigation for researchers who do have skills in this area.

4.5 Clinical Implications

As well as the research implications outlined in the previous section, the findings of the present study also have a number of direct clinical implications. The intervention appears to have produced reductions in substance use and an increase in coping skills in a relatively brief time period of only eight to ten sessions. As such, it has potentially very beneficial clinical utility. As a stand-alone treatment, the intervention studied in the present research was not sufficient to 'treat' all of the issues and disorders presented by the adolescents. However, one option is that, in the future, an intervention such as the one used in the present study might be a part of a multi-systemic treatment intervention with adolescents and their families.

Although this research was an efficacy trial, the intervention was studied in a potentially 'real world' setting, that of a high school. The fact that it was carried out successfully within schools may have implications in terms of its use and effectiveness as a secondary prevention strategy in high school settings. That is, it could be used with adolescents who are having difficulties with drugs and alcohol, but are not severe enough to be referred to standard care settings such as the DHB-based Youth Alcohol and Drug workers or the Child and Adolescent Mental Health Services. School guidance counsellors and community social workers could be trained in the standardised treatment intervention, therefore making empirically validated treatment accessible to a wider range of adolescents. Treatment in the school setting would also mean that adolescents whose families are unable or unwilling to participate in treatment would have easier access to help (i.e. no transport concerns, not having to self-refer to an external agency). As already stated, more research into the interventions utility in standard care settings, and as a secondary prevention strategy, is needed.

The fact that the programme used is manual-based means it is relatively easily disseminated to practitioners, and this too has positive clinical implications. However, if it is to be successfully disseminated to other psychologists, therapists or guidance counsellors in the future, then specific training and supervision will be necessary. Ideally, the treatment manual is used as a 'toolbox' of techniques, and a set of guidelines that provide overall structure to the treatment of an adolescent

client. It is very important to state that the manual cannot simply be picked up and used as a 'script' for therapy. If future research continues to prove the effectiveness of the present study's programme, then efforts will need to be directed into effective training programmes. Potentially, the present study's treatment programme has many potential clinical uses, across a range of settings and could be utilised by a broad spectrum of mental health professionals.

4.6. Conclusion

In conclusion, the intervention that is the focus of the present study appears to be a promising approach to the treatment of New Zealand adolescents who abuse substances. It was successful in changing the substance use behaviour of three adolescents, resulting in the participants reducing their cannabis use, and increasing their coping and relapse prevention skills. The main findings point to the intervention's effectiveness as a harm minimisation strategy. As discussed, there are a number of limitations to this study and a wide range of areas that still need further investigation in relation to the treatment programme. However, what this research has highlighted is that the structured intervention developed for use in the present research is definitely worthy of further study. It has potential both as part of a multi-dimensional treatment programme in standard care settings, and as an individualised secondary prevention intervention in high schools.

Many of the patterns and habits that are formed during adolescence are continued throughout the course of people's lives (Schulenberg et al., 2001), and therefore interventions that impact positively on a young person's life at this point can have life-long beneficial consequences. A particular strength of the present study's programme is its ability to help a young person engage and change in a relatively brief time period. Additionally, the use of a structured treatment manual means that in the future it could be relatively easily disseminated to mental health practitioners in standard care settings. Randomised controlled trials are now needed to determine if the programme is effective with a wider range of adolescents, and to ascertain which components of the intervention are the most critical.

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APPENDICES

Appendix A - DSM-IV Criteria for Substance Dependence

DSM IV Substance Dependence Criteria (APA, 1994)

A maladaptive pattern of substance use, leading to clinically significant impairment or distress, as manifested by three (or more) of the following, occurring at any time in the same 12-month period:

1. tolerance, as defined by either of the following:
   (a) a need for markedly increased amounts of the substance to achieve intoxication or desired effect
   or
   (b) markedly diminished effect with continued use of the same amount of the substance
2. withdrawal, as manifested by either of the following:
   (a) the characteristic withdrawal syndrome for the substance
   or
   (b)the same (or a closely related) substance is taken to relieve or avoid withdrawal symptoms
3. the substance is often taken in larger amounts or over a longer period than was intended
4. there is a persistent desire or unsuccessful efforts to cut down or control substance use
5. a great deal of time is spent n activities necessary to obtain the substance (e.g., visiting multiple doctors or driving long distances), use the substance (e.g., chain-smoking), or recovering from its effects
6. important social, occupational, or recreational activities are given up or reduced because of substance use
7. the substance use is continued despite knowledge of having a persistent physical or psychological problem that is likely to have been caused or exacerbated by the substance (e.g., current cocaine use despite recognition of cocaine induced depression, or continued drinking despite recognition that an ulcer was made worse by alcohol consumption)

Specify if:

With Physiological Dependence: evidence of tolerance or withdrawal (i.e., either Item 1 or 2 is present)

Without Physiological Dependence: no evidence of tolerance or withdrawal (i.e., neither Item 1 nor 2 is present)

Appendix B – Letter to participants

Letter A
Massey University Letterhead

Dear

Your school guidance counsellor has given your name to me. You may remember him/her advising you that I would get in touch with you.

I am inviting you to take part in a research project, which I am undertaking as a part of my studies for my Masters Degree at Massey University.

Please find enclosed the Information Sheet about the project.

Please note that WellTrust has approved this research project but the information collected will be used ONLY for research purposes.

I would like to meet with you and your parent/caregiver on_____, at a time that would suit your family. I will explain the study to you then, and ask you to sign a consent form if you would like to be involved.

Please find enclosed a list of possible times. Please indicate a time that would fit in with your parent/caregivers timetable, and return this to your school guidance counsellor. The Information session will be an individual meeting with you and your parent/caregiver and the researcher. It will take about an hour and will be held at the school, in room _____.

I look forward to meeting with you then.

Yours sincerely

Anna Jory

Appendix C – Letter to parents/caregivers

Massey University Letterhead
Date

Dear

Your child's school guidance counsellor has given your child's name to me. Your child may have advised you that I would get in touch with you.

I am inviting your son/daughter to take part in a research project, which I am undertaking as a part of my study for a Masters Degree at Massey University.

Please find enclosed the Information Sheet about the project.

Please note that WellTrust has approved this research project but the information collected will be used ONLY for research purposes.

We would like to meet with you and your son/daughter on _____, at a time that would suit your family. We will explain the study to you then, and ask you to sign a consent form if you consent to your child being involved.

Please find enclosed a list of possible times. Please indicate a time that would fit in with your timetable. Your son/daughter can then return this to the school guidance counsellor. The Information session will be an individual meeting with you and your child and the researcher. It will take about an hour and will be held at the school, in room _____. If it is not convenient for you to come to an information session on this day, please contact me, and I will arrange an alternative time with you (my phone numbers and e-mail address are on the information sheet).

I look forward to meeting with you then.

Yours sincerely

Anna Jory

Appendix D – Information sheet for participants

Information Sheet for Participants

My name is Anna Jory and I wish to invite you to participate in a research project involving young people who have been referred to WellTrust because of their use of drugs or alcohol. I am a graduate student in the School of Psychology at Massey University, and I am doing this research as part of my study towards a Masters Degree. My supervisor is Dr Kevin Ronan.

I can be contacted on 06 350 5799 or 021 118-2697, e-mail annajory@hotmail.com. Dr. Ronan can be contacted at 06 350 5799, extension 2069, e-mail K.R.Ronan@massey.ac.nz.

The purpose of the study is to see how effective a particular type of intervention, which is called a cognitive-behavioural intervention, is with young people who are using alcohol and/or drugs.

If you choose to participate in this research project, you will take part in an assessment interview, where you will be asked some questions about your background, about your ideas about your life, and about your use of drugs and/or alcohol. You will also be asked to fill in some questionnaires. Altogether this will take about two and a half hours. Then you would go through ten weekly one-hour sessions of Cognitive-Behaviour therapy, during which time you would be working with a counsellor, looking at your issues surrounding drug and/or alcohol use. The total time you would be involved in the research project is between 12-15 weeks, with 1 hour of your time being taken each week. During this time you would be asked to keep weekly records of how much alcohol you drink and how much/many drugs you use. In addition to this 12-15 week time period, you would also be asked to participate in another 2 hour assessment session immediately after the last treatment session and at 6 weeks and three months after the last session, when you will be asked to answer some more questions and complete some more questionnaires. Assessment sessions and therapy sessions will be audiotaped.

WellTrust is supportive of this research project and has referred us to the guidance counsellor in your school. WellTrust will be supporting this project for the whole time that you are a participant in the study, but they will not have access to your personal details, or know the names of individual participants.

By participating in this research project, you will help us find out if cognitive behaviour interventions work for young people. These findings will be helpful to WellTrust, to you and to other young people who will be having similar issues with drug use in the future. Cara Morrisson, another student from Massey University, also studying for her Masters Degree, will administer some of the questionnaires to you.

Only the researchers will have access to your personal details. Only we will know the names of the participants. The Code of Ethics of the New Zealand Psychological Society, which states that client's confidentiality shall be kept, binds both my supervisor and myself. All personal details will be coded and only I will have access to these.

On completion of the thesis, the written information will either be destroyed or, if participants consent, stored in a research archive.

If you are interested in the findings of the research you will be sent a summary of the findings.
The information collected will only be used for the thesis and any papers published in relation to the thesis.

Your rights as a participant are:

- To decline to participate and to withdraw from the study at any time;
- To refuse to answer any particular questions;
- To ask to stop the audio tape at any moment;
- To withdraw from the study at any time, and still be able to go through the treatment sessions.
- To ask any questions about the study at any time during participation;
- To provide information on the understanding that your name will not be used unless you give permission to the researcher;
- To be given access to the summary of the findings of the study when it is concluded;
- To have your anonymity and confidentiality protected.

This project has been reviewed and approved by the Massey University Human Ethics Committee, PN Protocol 02/102. If you have any concerns about the conduct of this research, please contact
Professor Sylvia V Rumball, Chair,
Massey University Regional Human Ethics Committee
Palmerston North, telephone 06 350 5249,
email S.V.Rumball@massey.ac.nz.

Appendix E – Information sheet for parents/caregivers

Information Sheet for Parents/Caregivers

My name is Anna Jory and I wish to invite you and your son/daughter to participate in a research project involving young people who have been referred to WellTrust because of their substance use. I am a graduate student in the School of Psychology at Massey University, carrying out this research as part of my study for a Masters degree. My supervisor is Associate Professor, Dr Kevin Ronan.

I can be contacted on 06 350 5799 or 021 118-2697, e-mail annajory@hotmail.com. Dr. Ronan can be contacted at 06 350 5799, extension 2069, e-mail K.R.Ronan@massey.ac.nz.

The purpose of the study is to determine how effective cognitive-behavioural interventions are with young people who are using alcohol and/or drugs, and to identify relations between adolescent drug use and resiliency and risk factors as identified in New Zealand and overseas literature. It forms the pilot study for a larger piece of research into the effectiveness of Cognitive-Behavioural Interventions with adolescents.

Young people who choose to participate in this research project will take part in an assessment interview before and after cognitive-behavioural interventions. They will answer some questions and complete a battery of questionnaires, which will take about two and a half hours. They will go through ten one-hour cognitive-behavioural treatment sessions, aimed at helping them learn new skills and deal with their issues surrounding drug and alcohol use. Immediately after the treatment and 6 weeks and three months after the treatment, research participants will be invited to take part in another two-hour assessment, when they will be asked to complete another battery of questionnaires. I would also invite you, as parent/caregiver, to complete one questionnaire about your child, both prior to and after the treatment sessions. Your answers to this questionnaire would be kept completely confidential. This questionnaire will take about 15 minutes to complete.

WellTrust is supportive of this research project and has referred us to the guidance counsellor at your child's school.

By participating in this research project, your son/daughter will help us in the process of identifying successful and efficient therapeutic approaches for young people who have issues surrounding alcohol and drug use - they will help us find out if cognitive behaviour interventions work for young people. These findings will be helpful to WellTrust, to your son/daughter and to other young people who will be having similar issues with drug use in the future.
Only the researchers will have access to the personal details. Only we will know the names of the participants. The Code of Ethics of the New Zealand Psychological Society, which states that client's confidentiality shall be kept, binds both my

supervisor and myself. All personal details will be coded and only I will have access to these.

On completion of the thesis, the written information will either be destroyed or, if participants consent, stored in a research archive.

If either your son/daughter or yourself are interested in the findings of the research you will be sent an executive summary of the findings.
The information collected will be used for the sole purpose of the theses and any papers published in relation to the theses.

Your sons/daughters rights as a participant are:

- To decline to participate and to withdraw from the study at any time;
- To refuse to answer any particular questions;
- To ask to stop the audio tape at any moment;
- To withdraw from the study at any time without any effect on services being provided;
- To ask any questions about the study at any time during participation;
- To provide information on the understanding that their name will not be used unless permission is given to the researcher;
- To be given access to the summary of the findings of the study when it is concluded;
- To have their anonymity and confidentiality protected.

Your rights as parents/caregivers are:

- To decline to participate and to withdraw your child from the study at any time, without any effect on services being provided;
- To ask any questions about the study at any time during participation.
- To provide information on the understanding that your name will not be used unless permission is given to the researcher;
- To be given access to the summary of the findings of the study when it is concluded;
- To have your anonymity and confidentiality protected.

This project has been reviewed and approved by the Massey University Human Ethics Committee, PN Protocol 02/102. If you have any concerns about the conduct of this research, please contact:
Professor Sylvia V Rumball, Chair,
Massey University Regional Human Ethics Committee, Palmerston North: telephone 06 350 5249, email S.V.Rumball@massey.ac.nz.

Appendix F – Research Consent Form

Research Consent Form

I have read the Information Sheet and have had the details of the study explained tome. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I understand I have the right to withdraw from the study at any time and to decline to answer any particular questions.

I agree to provide the information to the researchers on the understanding that my name will not be used without my permission.

I agree to participate in this study under the conditions set out in the Information Sheet.

Signed: _____ (Participant)

Name: _____ (Participant)

Code:

Date: ___/___/___

I agree to my son/daughter participating in the research under the conditions set out in the Information Sheet.

Signed: _____ (Parent/Care giver)

_____

Name: _____ (Parent/Care giver)

_____

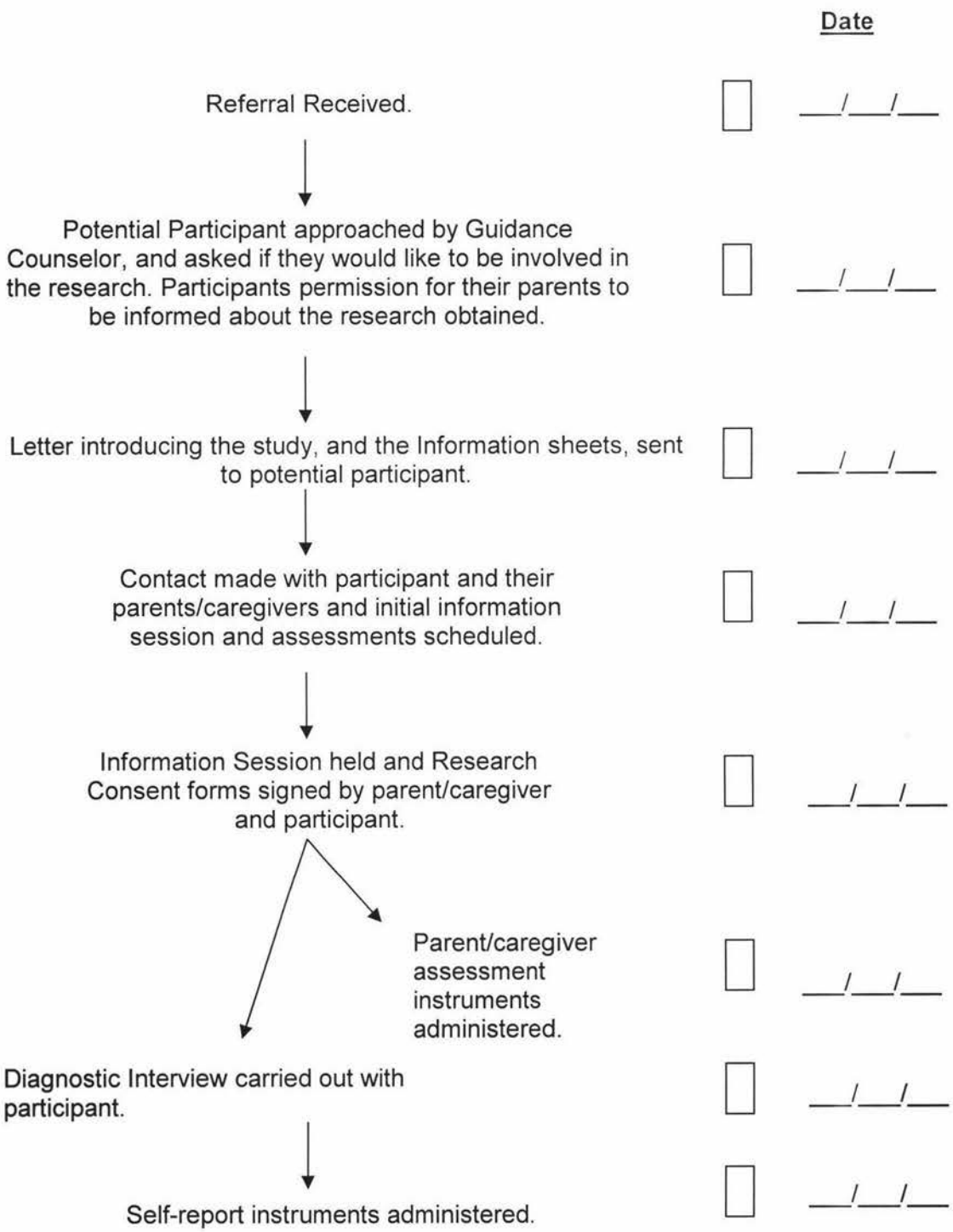
Date: ___/___/___

Appendix G – Protocol for informed consent and assessment

ID:_____

Flow Chart of Protocol for Informed Consent and Assessment

No step is carried out until the one prior to it has been completed



Appendix H – Example Weekly Record

Weekly Record

Fill in the type and amount of any drugs or alcohol used.
Please be as accurate as possible.

	Morning	Afternoon	Evening/Night
Monday __/__/__			
Tuesday __/__/__			
Wednesday__/__/__			
Thursday __/__/__			
Friday __/__/__			
Saturday __/__/__			
Sunday __/__/__			