

FINAL REPORT



Grantee: Deakin University

Grantee Representative: Associate Professor Petra Staiger

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Summary of project achievements relative to original proposal specifications

Original Proposal	Study Achievements
Modify and pilot a Responsible Drinking Program for a recovering drug user group based on the Alcohol Skills Training Program (ASTP).	Achieved as per original proposal
Evaluate, utilising a RCT design, the effectiveness of the Responsible Drinking Program for the participant group.	Achieved as per original proposal
Develop a set of resource materials based on the program outcomes that can be disseminated to agencies across the wider allied health sector.	Achieved as per original proposal
Discuss how the Responsible Drinking Program may be adopted by other agencies providing residential drug treatment programs.	Achieved as per original proposal
Provide copies of resource materials and manuals created for the purpose of the project and overview of the dissemination strategy.	Achieved as per original proposal

PREVENTING RELAPSE:

A RESPONSIBLE DRINKING PROGRAM FOR RECOVERING DRUG USERS

FINAL REPORT

31 January 2011



windana

Funded by



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PROJECT TEAM

CHIEF INVESTIGATOR: Associate Professor Petra Staiger, Deakin University

STAFF AND PARTNER ORGANISATIONS

DEAKIN UNIVERSITY

Ms Amelia Lake
Ms Caroline Long

UNIVERSITY OF WASHINGTON

Professor Alan Marlatt

ODYSSEY HOUSE VICTORIA

Ms Miranda Manning
Dr Stefan Gruenert
Mr Neos Zavrou

WINDANA

Mr Keith Edwards

STAFFING AND STEERING COMMITTEE:

STEERING COMMITTEE

Eric Allan
Keith Edwards
Antigone Quince
Laura Petrie
Petra Staiger
Miranda Manning
Stefan Gruenert
Amelia Lake
Caroline Long

GROUP FACILITATORS

Lorna Robinson
Annette D'Amore
Susan Pepper
Caroline Long
Amelia Lake

RESEARCH INTERVIEWERS

Gillian Campbell
Brooke Feltis
Catherine Kelly
Sian Kennedy
Elodie O'Connor
Anna Serlachius
Anna Thomas
Jordan Trew
Kristen Tulloch
Bill Wans
Danielle Williams

AUTHORS

Associate Professor Petra Staiger
Ms Amelia Lake
Ms Caroline Long

School of Psychology
Faculty of Health, Medicine, Nursing and Behavioural Sciences
Deakin University, Burwood, 3125, Australia
Ph: 03 9244 6876
Fax: 03 9244 6858
Email: pstaiger@deakin.edu.au

GLOSSARY OF TERMS

AIP	Alcohol Intervention Program
BAEP	Basic Alcohol Education Program
AOD	Alcohol and Other Drugs
ASTP	Alcohol Skills Training Program
NHMRC	National Health and Medical Research Council
OHV	Odyssey House Victoria
RCT	Randomised Controlled Trial
SD	Standard Deviation
TC	Therapeutic Community
TTC	Therapeutic Telephone Counselling

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EXECUTIVE SUMMARY

This report documents the final outcomes of the “**Preventing Relapse: A responsible drinking program for recovering drug users**” project (Research Grant number G1073/D1316) for the period ending January 31st, 2011.

BACKGROUND AND OBJECTIVES

The project aim was to develop and evaluate the effectiveness of an alcohol intervention program for participants who are undergoing treatment for drug dependence.

Rationale

Heavy alcohol consumption is reported to be an important and often underrated problem in the treatment of drug dependence. Recovering drug users reportedly engage in problem drinking post drug rehabilitation. In addition to the usual problems associated with alcohol misuse, individuals may be placed at greater risk of relapse into other drugs. To date, the majority of residential drug rehabilitation services do not offer specific alcohol treatment components to address this potential risk for relapse. The current randomised controlled design enables the systematic evaluation of an evidence based alcohol intervention program for recovering drug users referred to as the Alcohol Intervention Program.

Development of the Alcohol Intervention Program

The alcohol intervention program (AIP) is based on an adapted version of the Alcohol Skills Training Program (ASTP) which is an evidence-based intervention developed for college students in the USA by Professor Alan Marlatt and his colleagues. The first phase of the project was to modify the ASTP to suit the target population, pilot the intervention and make appropriate modifications. The intervention is sequential and uses a closed group format of five sessions with the addition of two individual telephone-based sessions once the individual leaves the TC. The sessions are designed to progressively build upon a participant’s knowledge and skills. In particular, group sessions aim to equip them to use mindfulness strategies to manage emotional states, to understand motives and expectations about alcohol, to ensure adequate knowledge of the effects of alcohol and to manage personal and social

situations in relation to alcohol consumption. A manual guides group facilitators and participants have a workbook to act as a resource and reminder of program content.

The intervention was piloted and following this it was refined to more clearly articulate the group facilitators' tasks and enhance session flow. This included reworking and re-ordering material, inserting clear page links between the manual and corresponding workbooks, enhancement of graphics, and inclusion of facilitator action boxes. A mindfulness exercise CD was created which was included in the workbook provided to the AIP group.

The second phase of the project involved recruiting participants for the study and commencing the group interventions. Facilitators received weekly supervision to monitor and guide their AIP group work and to enable the research team to remain informed of the progress of each group. In addition, groups were routinely digitally recorded to ensure fidelity of program content.

Research Design

The effectiveness of the AIP intervention was tested via a randomised controlled trial with a basic alcohol education program (ie: "treatment as usual") for comparison. The follow up period was 3 months and 9 months following exit from the Therapeutic Community. (Refer to Figure 1: Recruitment, allocation and retention profile).

Participants

Participants consisted of individuals who were currently undergoing residential treatment for their substance dependence problems. The treatment programs were two therapeutic community (TC) residential treatment facilities within Victoria. Average duration of treatment within the TC is approximately 6 months. Clients participate in the alcohol intervention group approximately 4-6 weeks into their residential stay. Inclusion criteria was almost identical to that of entry to the TC: the participant was 18 and over, could read English and fulfilled DSM IV criteria for substance dependence disorder in the previous 12 months. Only individuals with a major neurological disorder or current psychotic disorder were excluded from the study.

Procedure

After clients had been in the TC for a 4 week period they were invited to participate in the study. Randomisation to one of the intervention groups occurred following assessment. Follow up assessments occurred face to face or by telephone for both groups at 3 and 9 months after exiting drug rehabilitation.

Measures

A range of standardised measures were utilised to measure alcohol, drug use, social functioning and mental health functioning. Qualitative data (at 3 and 9 months post TC exit) was also collected regarding perceptions of the program, reasons for relapse and the potential role that alcohol may have played.

Control Group

It was not possible to conduct a no intervention control group as one of the TCs had an existing alcohol education program and so for ethical reasons we were not able to remove this component. The control group was therefore a 'treatment as usual' intervention consisting of basic alcohol education (which we manualised in order to standardise that component). It was conducted over 2 sessions and was similar in content to a drink driving alcohol education program.

Data Analysis

Statistical analyses were conducted on the variables related to alcohol and drug use, social functioning and mental health functioning. Qualitative data was reported in tables as well as thematically analysed regarding satisfaction with the program, role that alcohol played in relapse and other factors associated with relapse.

Primary Outcome Analyses

Alcohol: Individuals participating in treatment for drug dependency reported statistically significant reductions in alcohol use (number of days of use over the previous 90 days and average number of drinks per drinking day) regardless of treatment allocation (i.e., standard alcohol education or a skill based alcohol intervention) 3 and 9 months after exiting the TC. At treatment entry 17.6% of individuals with a drug dependency problem were drinking alcohol within NHMRC safe drinking guidelines (2 or less standard drinks per day) whereas 9 months after exiting treatment 40.25% were now drinking within safe limits.

Relapse to drug use

Relapse to drug use 3 months after exiting the TC was significantly lower in those who had participated in the Alcohol Intervention Program. AIP participants continued to report lower levels of relapse at 9 month after exiting the TC, however this was no longer significantly different to those in the BAEP. Interestingly, over half of the participants in both groups reported that alcohol contributed to their relapse to drug use. Qualitative data however indicated that those individuals who had participated in the intervention group reported that the program helped them understand the link between alcohol use and potential relapse to their primary drug problem.

Secondary Outcome Analyses

Illicit drugs: Participants in both groups reported statistically significant reductions in the number of days they used illicit drugs in the past 90 from baseline to 3 months. This was sustained at the 9 month follow up point. These findings were reported for the three most frequently used problematic illicit drugs (heroin, cannabis and amphetamines).

Social Functioning

Social functioning was assessed at each follow up point using the social functioning domain of the OTI which addresses residential stability, employment, inter-personal conflict, social support, and drug culture involvement. Significant improvements in social functioning scores were reported for both intervention groups at both the 3 and 9 month follow up assessments.

Mental Health Functioning

Mental health functioning was assessed at each follow up point using one of the items from the ASI. “How many days out of the last 30 have you experienced significant psychological problems?”. Significant decreases in number of days experiencing psychological distress were reported for both intervention groups at both the 3 and 9 month follow up assessments

Program Satisfaction

Clients reported high levels of satisfaction with the alcohol intervention program. Qualitative analysis indicated that individuals attending the intervention group reported finding the mindfulness component, relapse prevention and the information on safe drinking levels very helpful. Less useful was the component on challenging alcohol expectancies and assertiveness training.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

In conclusion this study constitutes the first RCT to investigate the effectiveness of an alcohol intervention for drug dependent users. Individuals in residential treatment for drug dependence generally responded positively to the introduction of a specific alcohol intervention. Overall, there was a significant and clinically relevant reduction in alcohol use across both groups although at least half of the participants were still drinking above NHMRC recommended levels of safe drinking. Importantly, our findings indicate that alcohol may play a contributing role in relapse to drug use and that an intervention specifically developed to address alcohol is an effective way to reduce relapse to drug use. Further work is required in order to ensure that these effects are sustained in this group of individuals. From our review the literature and the findings and experiences of this study we believe that it is possible that the potential risks of using alcohol whilst recovering from drug dependence have been underestimated.

We offer the following recommendations to be considered by service providers in relation to treatment for drug dependence.

1. We suggest that treatment for drug dependence includes a specific alcohol intervention component in order to address the harms associated with alcohol as well as its potential as a risk for relapse.
2. Mindfulness appeared to be a useful component of the alcohol intervention program and hence we recommend that residential programs consider including this as part of treatment for drug dependence.

INTRODUCTION

Alcohol is the most commonly used recreational drug and is heavily implicated in the global burden of mortality and morbidity (Rehm, et al., 2009). The harms associated with alcohol misuse are well documented, however available research tends to be framed on the basis of the primary drug of choice, overlooking the interactions with other implicated licit and illicit substances (Colpaert, Vanderplasschen, Van Hal, Broekaert, & Schuyten, 2008). As a consequence, the relationship between illicit drug use and alcohol, particularly regarding post treatment outcomes, is not established. This is despite the recognition that drug users tend to regularly use or be dependent on multiple substances, with alcohol a common inclusion (Gossop, Marsden, Stewart, & Kidd, 2003).

Alcohol use and, in particular, heavy drinking can be an important and often underrated problem in the treatment of drug users (Gossop, Browne, Stewart, & Marsden, 2003). Over 80% of individuals dependent on alcohol are dependent on multiple substances (Degenhardt & Hall, 2003; Gossop, Marsden et al., 2003). Effective treatment for illicit drug use should therefore incorporate alcohol use into treatment planning; however there is no evidence that this is an accepted premise for existing services. Overlooking alcohol use renders drug users vulnerable to any or all of the following after drug treatment: a) substitution, b) relapse, and c) increased risk of harm.

Firstly, in considering post-treatment outcomes, illicit drug users may be substituting alcohol for their primary drug of choice following treatment for illicit drug addiction. The Australian Alcohol and Other Drug Treatment Services National Minimum Data Set found that over half (52%) of all treatment episodes involved two or more drugs, which in 57% of the cases, was alcohol (Australian Institute of Health and Welfare, 2009). Illicit drug use significantly declines following treatment; but relapse and return to treatment is common (e.g., 75% had one or more relapses in the 12 years following treatment in DARP; Simpson, 1986). A majority of longitudinal studies of drug use provide support for the argument that following treatment some individuals are substituting alcohol use for their primary drug of choice. Of the studies that have explored or commented on patterns of alcohol use following treatment for illicit drug use, two main findings have generally been reported: a) some participants who were non-drinkers at intake began consuming alcohol at follow-up, and b) some who were drinking at intake, increased their alcohol consumption at follow-up. For example, Simpson

(1986) reported 12 year follow up data on participants who were part of the DARP study. He found that 25% of the abstinent heroin users reported using alcohol. In another study of drug use histories, alcohol consumption was lowest during heavy heroin use. When heroin use declined (i.e., during treatment), alcohol use substantially increased (Anglin, Almog, Fisher, & Peters, 1989).

Secondly, there is evidence to suggest alcohol may be implicated in a subsequent relapse to the drug of choice. Support for this includes the following, Stenbacka and colleagues found that those who relapsed to illicit drug use were significantly more likely to test positive for alcohol use than participants who did not relapse (Stenbacka, Beck, Leifman, Romelsjö, & Helander, 2007) and more frequent users of alcohol experienced more relapse episodes. Illicit drug users who drink are more likely to leave treatment earlier (Llorente del Pozo, Gomez, Fraile, & Perez, 1998; Stenbacka et al., 2007) and are less likely to practice successful strategies for abstinence or moderate use. Hypotheses to explain this include: 1) alcohol use as a compensatory drug to manage cravings and therefore decreased opportunities for practicing more constructive strategies, 2) an expression of addictive behaviour in clients with histories of poly-substance use (Stastny & Potter, 1991), or 3) a conditioned motivation to use the drug of choice or poor decision-making as a consequence of the effect of alcohol on impulse control and decision making.

Finally, there is an increase risk of harm, such as increased risk of overdose, from combined alcohol and illicit drug use. Clients with a history of overdose tend to report higher levels of alcohol use (Mcgregor, Darke, Ali, & Christie, 1998). Drug users with Hepatitis C face a higher risk of overdose or cirrhosis if they consume alcohol and their nominated drug concurrently. Alcohol combined with other depressant drugs has an additive effect. It results in a need for decreased quantity of drug, but increased risk of fatal overdose. Alcohol can be used to moderate the less desirable effects of stimulant drugs; however it also interferes with the body's automatic protective responses (e.g., emesis and loss of consciousness) as the body balances the competing effects of each drug. Both types of combination use put drug users at significant risk of overdose and death. Concurrent use of alcohol with illicit drugs results in worse outcomes both for recovery from drug use and worse mental and physical outcomes generally (Anglin, Hser, & Grella, 1997; Gossop, Marsden et al., 2003; Green & Jaffe, 1977; Singer, Salaheen, Mirhej, & Santelice, 2006); including increased risk of medical complications, higher mortality rates, greater levels of mental health issues, criminal

involvement in addition to overdose and relapse (Roszell, Calsyn, & Chaney, 1986; Rowan-Szal, Chatham, & Simpson, 2000). As yet, alcohol education is not a common component of relapse prevention for drug users. On the basis of the available research, it would seem to offer significant potential for improving outcomes for drug users in recovery.

PROJECT AIMS

The project aim was to develop and evaluate the effectiveness of an alcohol intervention program for participants who are undergoing treatment for drug dependence.

METHOD

DESIGN

The effectiveness of the AIP intervention was tested via a randomised controlled trial with a basic alcohol education program (ie: “treatment as usual”) for comparison. The follow up period was 3 months and 9 months following exit from the Therapeutic Community (Refer to Figure 1: As per CONSORT guidelines recruitment, allocation and retention profile are presented).

PARTICIPANTS

Participants in the study were individuals currently undergoing treatment for drug or alcohol dependence recruited from two residential therapeutic treatment facilities based in the outer suburbs of Melbourne. Once participants had been at the TC for a 3-4 week period they were invited to participate in the evaluation of the AIP. Inclusion criteria was almost identical to that of eligibility required in order to enter the TC: the participant was 18 and over, could read English and fulfilled DSM IV criteria for substance dependence disorder in the previous 12 months. Only individuals with a major neurological disorder or current psychotic disorder were excluded from the study. All TC residents were invited to attend the Alcohol Intervention Study as management of the TC did not want those with an alcohol primary problem to be treated differently within a TC setting. We designed the interventions to take into account different drinking goals (i.e., abstinence and moderate drinking) however the primary focus of the program was on those with a dependent drug problem.

Of the 227 residents who were invited to participate over a 23 month period, 22 declined to participate and 13 did not meet inclusion criteria specified above. An additional 6 people consented to participate in the study, but left the TC prior to randomisation, with the remaining 186 admitted to the study (119 males, 67 females); representing an 82% recruitment rate. Of the 186 participants, 20 did not complete any intervention sessions, leaving a remaining 166 participants for analysis. Average duration of treatment for the entire sample was 8.7 months (ranging between 21 - 974 days). Consenting participants were randomly assigned to one of two treatment conditions approximately 3-6 weeks into their residential stay. Follow up interviews were conducted by trained researchers who were blind to the treatment group. Follow up rates at the final interview (9-months post-TC exit) were 84% and 78% for BAEP and AIP participants respectively. Participants who were lost to follow up generally dropped out of contact and two participants were deceased. Participant recruitment, allocation and retention are presented in a flow diagram on the following page.

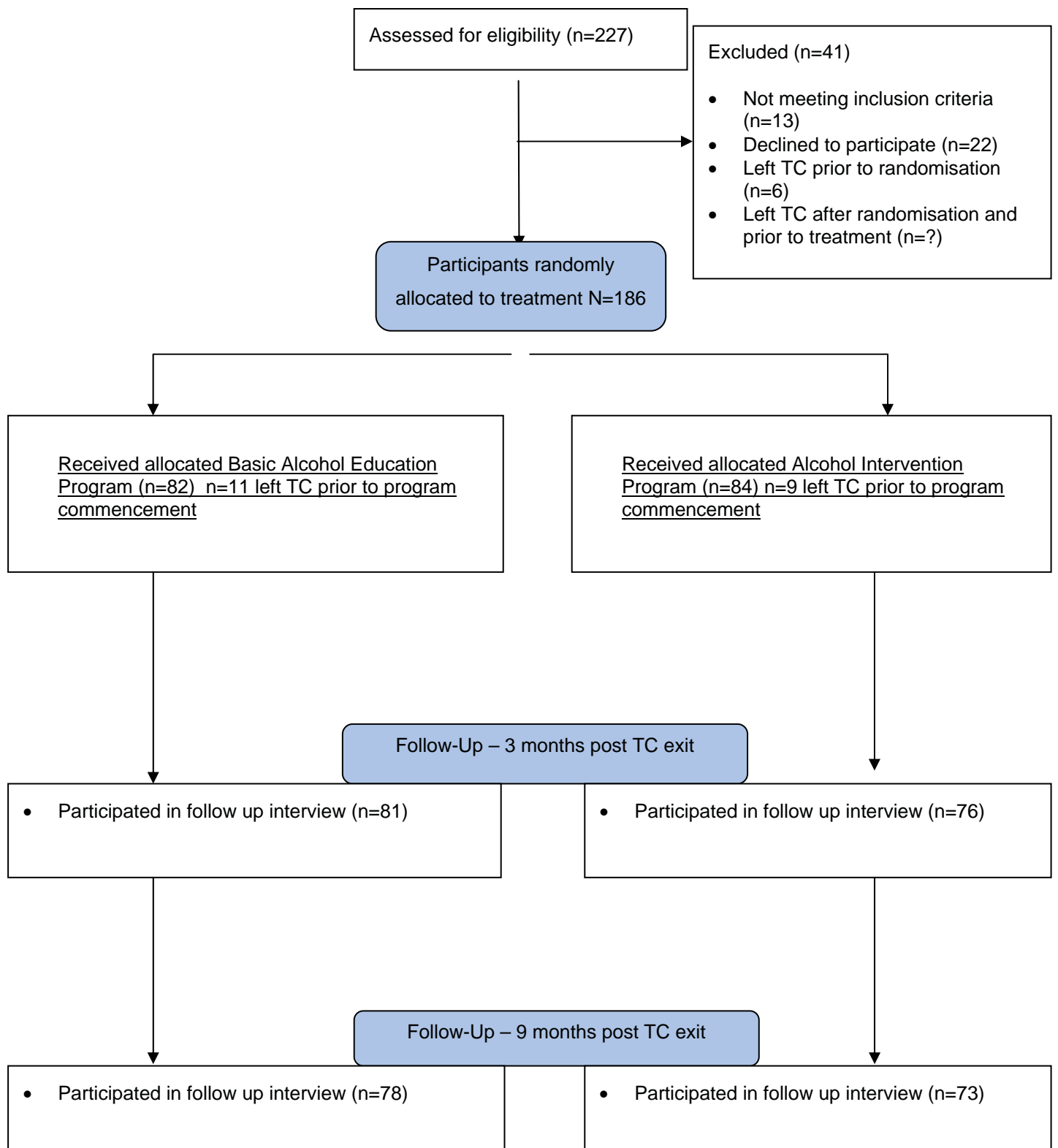


Figure 1 : Recruitment, allocation & retention profile

The primary focus of this intervention was to reduce alcohol consumption and hence possibly minimise the risk of relapse to drug use. The secondary focus of this intervention was to assess whether the intervention improves skill acquisition, health status and psychosocial functioning. A careful review of the outcome and assessment literature resulted in the following empirically validated measures being chosen to assess these two foci. Additionally, demographic questions were collected at baseline, which included age, gender, ethnicity/nationality, country of birth, marital status, level of education achieved, occupation, employment status, primary substance of abuse, age at onset of substance abuse problems, and duration of problematic alcohol or drug use.

Addiction Severity Index (ASI)

The ASI (McLellan, Luborsky, Woody, & O'Brien, 1980) is a structured clinical interview designed to evaluate treatment outcome for substance-dependent individuals. The fifth edition (McLellan, et al., 1992) was used in the current study, which consists of seven potential psychosocial problem areas in substance and alcohol abusing patients – medical status, employment, alcohol use, drug use, legal status, family and social relationships, and psychiatric symptoms. However, this paper will only report on items from the psychiatric symptoms subscales. The ASI has been used extensively in both clinical practice and in the research literature on substance use, including dual diagnosis.

Opiate Treatment Index (OTI)

The Opiate Treatment Index (Darke, Ward, Hall, Heather, & Wodak, 1991) is a multi-dimensional instrument based on the self-reported behaviour of the participant, which consists of six independently measured outcome domains: drug use, HIV risk-taking behaviour, social functioning, criminality, health, and psychological adjustment (Darke, Hall, Wodak, Heather, & Ward, 1992). For the present study, we utilised only the social functioning domain of the OTI. Social functioning is measured on a 12 item scale which addresses residential stability, employment, inter-personal conflict, social support, and drug culture involvement (Darke et al., 1991). Scores range from 0 to 4 for each item, and higher scores indicate a higher level of social dysfunction (Darke et al., 1992). The social functioning subscale has excellent test-retest reliability for both the same and different

interviewer one week after initial interview (ranging from 0.85 to 0.89); the subscale correlated significantly ($p < .005$) with the Addiction Severity Index (0.42), supporting the validity of the instrument; and internal reliability was found to be moderate ($\alpha = 0.58$) (Darke et al., 1992). Reliability should not be expected to be high due to the wide range of concepts being measured within the domain. A validation study in the United Kingdom (Adelekan, et al., 1996) reported similar results.

Timeline Follow-back Method (TLFB)

Timeline Follow-back Method (Sobell, Sobell, Leo, & Cancilla, 1988) was used as a measure of quantity and frequency of alcohol and drug use. The TLFB makes use of a calendar technique developed to obtain an accurate retrospective account of alcohol consumption, and, for this project, included the preceding 90 days. It has been used extensively in the literature for the last 10 years and has high test-retest reliability (Dawe, Loxton, Hides, Kavanagh, & Mattick, 2002). The TLFB's reliability and validity is well documented and it has been recently validated for collecting information on other drug use in addition to alcohol consumption (Dawe et al., 2002).

Severity of Alcohol Dependence Questionnaire (SADQ-C)

The Severity of Alcohol Dependence Questionnaire (Stockwell & Sitharthan, 1994) is a 20 item questionnaire designed to measure the severity of dependence on alcohol, and also includes a measure of impaired control. It is a commonly used measure, particularly in Britain and Australia, and has demonstrated good reliability and validity. In the current study it was administered once prior to drug treatment in order to consider alcohol dependence a predictor of treatment outcome. It has been suggested that the SADQ-C is an appropriate assessment tool for use with both problem drinkers (Dawe et al., 2002) and the general community (Stockwell & Sitharthan, 1994).

Severity of Dependence Scale (SDS)

The Severity of Dependence Scale (Gossop, et al., 1995) is a 5 item questionnaire focussing on the psychological aspects of drug dependence. It has been used in samples with a variety of drug dependencies (e.g., heroin, amphetamine, cocaine, cannabis, and benzodiazepine),

and has been found to have good psychometric properties (Gossop et al., 1995). The SDS was used in the current project to measure the degree of drug dependence experienced by the participants.

Client Satisfaction Questionnaire (CSQ-8)

The Client Satisfaction Questionnaire-8 (Attkisson & Greenfield, 2004) is an 8-item questionnaire designed to measure a client's satisfaction with a particular health-care service. The questionnaire was used in this study to evaluate how satisfied the clients were with the responsible drinking program intervention. It was administered at the post-intervention assessment. The CSQ-8 has good internal reliability, ranging from .83 to .93; while high construct validity has also been demonstrated (Attkisson & Greenfield, 2004). The CSQ-8 has been translated into 15 different languages, and is utilised across a wide range of populations and health services (Attkisson & Greenfield, 2004).

Qualitative Measures

Qualitative measures were created to assess participant's experience of the alcohol intervention groups and factors affecting re/lapses. At the 3 month follow up, participants were asked to provide details about any re/lapse in the three months prior to questioning, including the category of substance they relapsed with, two items about the role of alcohol in any re/lapse and two open-ended items about factors affecting any re/lapse. At the 9-month follow up, the re/lapse questions were repeated and two qualitative questions included about the level of perceived benefit from the AEP and what remained in their memory as the most useful aspects of the program.

DATA COLLECTION

Data collection occurred at four different time points; baseline, post-intervention (last day of the group intervention program), 3 months after exiting therapeutic community, and 9 months after exiting therapeutic community. At baseline, 3-month follow-up, and 9-month follow-up, a structured interview was administered. Self-report questionnaires were administered at baseline and at the post-intervention assessment.

CONTENT OF THE INTERVENTIONS

BASIC ALCOHOL EDUCATION PROGRAM (A)

The Basic Alcohol Education program was designed to capture the standard alcohol education program which was operating in one of the TC programs. Consequently, the information presented to these participants was similar to that presented at drink driver education courses. BAEP was a 2-session; semi-structured group program conducted on a weekly basis within the TC and delivered whilst participants were in the early to middle stages of the TC program. The first session introduced participants to the program and some basic alcohol information (such as definitions of a standard drink and Blood Alcohol Concentration) whilst the second session aimed to inform participants about the effects of alcohol and NHMRC information regarding low risk drinking levels.

ALCOHOL INTERVENTION PROGRAM (B)

The Alcohol Intervention Program is a 5-session sequential group program. It was conducted on a weekly basis within the TC by trained therapists who adhered to a treatment manual designed by the investigators. Each group session was designed to progressively build on clients' knowledge and skills of mindfulness (to manage emotional states) and their motives and expectations about alcohol (to ensure adequate knowledge of the effects of alcohol and to manage consumption in personal and social situations). Participants were encouraged to set one or more personal drinking limits with consideration to their health, previous alcohol consumption, substance use history and recommended low risk drinking guidelines. Ordinarily, participants elected to either be either abstinent or choose a moderate drinking limit that was personally manageable.

The first session introduced the program and provided standard alcohol information including defining a 'standard drink', Blood Alcohol Concentration, recommended drinking guidelines, facts about alcohol and its effects on the body, interaction effects with drugs and the impact of alcohol on Hepatitis C. Rapport building was an essential component and the program aimed to promote active and engaging group discussions. Session Two introduced mindfulness practice, which was iterated and expanded in subsequent sessions. Each participant's past alcohol use was considered, based on the measure (AUDIT) completed in Session 1, and relapse experiences and cues for over-drinking were reviewed. Participants were asked to consider the circumstances that put them at risk of drinking (high risk

situations) and are introduced to the basic principles of Dialectical Behaviour Therapy (Marsha Linehan). The session finished with a second mindfulness practice.

Session Three discussed alcohol expectancies, the biphasic (stimulation-depression) effects of alcohol and the practical management of cravings. It asked participants to consider what limits they would set on their future alcohol use and finished with mindfulness practice. Session Four began with a discussion of personal drinking limits and asked participants to identify their own and supported this thinking with education about techniques for drinking in moderation and practice in assertive communication, focussing on drink refusal. The final session reviewed the program to reinforce the key messages. It then returned to relapse prevention and monitoring alcohol intake. The session finished with the development of a personal drinking plan based on the limits chosen by each participant. Sessions Two to Five all included mindfulness practice and all sessions were supported by a parallel workbook which included a summary of key information, practical exercises and homework.

This treatment program also included post-intervention support in the form of therapeutic letters which were mailed to participants at six weekly intervals whilst they remained in the residential treatment program and aimed to minimise the reduction of treatment effect over time, reminding clients of the activities, skills and personal goals developed within the program. Additionally, two sessions of telephone counselling were delivered approximately a fortnight apart, after the participant has exited the residential treatment program and aimed to assist clients to manage cravings and adhere to their treatment goals regarding drinking. These sessions were loosely structured and consisted of a standardised 'check in' and a follow up call. The check in took the form of a brief assessment that reviewed their alcohol use to date and reminded them of their drinking plan and the strategies they learned in the program, reinforcing content where necessary. A referral for further intervention was available if required.

DATA ANALYSIS

Data were analysed using the Statistical Package for Social Sciences (SPSS) for Windows Version 17.0. Level of significance was set at .05. Missing data were replaced using the two-stage multiple imputation method recommended by Harel and Schafer (2003). Estimates derived from this method are less reliant on particular assumptions about the data and have been found to be more reliable than intention to treat replacement strategies.

Characteristics of the sample at baseline

Exploratory data analysis was conducted on the full sample of participants (N=166) across basic demographic variables such as gender, age, marital status, education level and employment rates. Baseline data on alcohol and drug use was calculated. Rates of treatment attendance and follow up completion were also calculated.

Primary Outcome Analyses

All data was appropriately screened. Primary outcome analyses included examining change in level of alcohol use for those who were attending the TC for a primary drug problem. Repeated measures ANOVAs were utilised. A Chi-square analysis was conducted to examine relapse to drug use in those with a primary drug problem. Qualitative data was presented in order to provide more details regarding participant's experiences and their views on the role of alcohol in relapse to drug use.

Secondary Outcome Analyses

In order to examine some of the secondary outcome variables repeated measures ANOVAs were conducted on the full sample. Change in heroin use was examined in those who had been using heroin prior to attending the TC. Similar analyses were conducted with cannabis and amphetamine users. Change in social and mental health functioning was examined for the full sample.

RESULTS

CHARACTERISTICS OF THE SAMPLE AT BASELINE BY TREATMENT GROUP

The following results are presented for the full sample who received one of the two interventions (N=166). Demographic characteristics of the study sample are presented in the following table.

Table 1 : Age, gender & days in TC for intervention participants

TC	BAEP Group (N=82)		AIP Group (N=84)		Total	
	N	%	N	%	n	%
Windana	37	45.1	39	46.4	76	45.7
Odyssey	45	54.9	45	53.6	90	54.3
Gender						
Male	51	62.2	56	66.7	107	64.4
Female	31	37.8	28	33.3	59	35.6
	Mean	SD	Mean	SD		
Number of days in TC						
	284.3	(218.2)	269.4	(219.6)	276.8	(218.3)
Minimum	26		21			
Maximum	974		929			
Percent above 90 days						
	84.1		81.0		81.9	
Age (years)	33.2	(7.3)	33.7	(8.1)	33.3	(7.7)
Minimum age	22		21			
Maximum age	62		65			

Ninety residents from OHV and 76 residents from Windana received one of the two interventions. The higher number of participants from OHV (54% compared to 46% from Windana) is a reflection of the different residential capacities of the respective TCs. Length of treatment spent in residential treatment has previously been shown to be predictive of improved AOD and social functioning with 90 days or more treatment recommended for optimal results (Simpson, 1981). Participants from the current study averaged 284.3 and 269.4 days of treatment for BAEP and AIP respectively, although wide ranging variance within each group resulted in significant standard deviations. Despite the broad range of days spent in residential treatment, the majority of respondents remained above the recommended 90 day threshold (84% and 81% for BAEP & AIP respectively). There were no statistically significant differences between the two groups on demographic characteristics such as age, gender or number of days in treatment. In addition, statistical analyses demonstrated no significant differences on baseline alcohol consumption and dependence indices such as the

average number of day taking alcohol, the average number of drinks consumed on any drinking day, and SADQ and SDS total score.

Social and cultural characteristics of the entire sample divided by treatment group are presented in the table below.

Table 2 : *Relationship status, country of birth & level of education by treatment group*

	BAEP (N=82)		AIP (N=84)	
	n	%	n	%
Relationship status				
Single (never married)	48	58.5	52	61.9
Separated/Divorced	15	18.3	12	14.3
Married/Living with partner	9	11.0	8	9.5
Steady partner	9	11.0	12	14.3
Casual partner	1	1.2	0	0.0
Country of Birth				
Australia	72	87.8	67	79.8
New Zealand/Oceania	1	1.2	1	1.2
South America/Caribbean	1	1.2	2	2.4
Africa	1	1.2	1	1.2
North America	0	.0	1	1.2
Asia	0	.0	4	4.8
Europe	7	8.5	8	9.5
Level of Education				
Some High School	42	51.2	48	57.1
TAFE/Certificate/Trade	21	25.6	16	19.0
Completed High School	12	14.6	13	15.5
University Graduate	4	4.9	5	6.0
University Post-Graduate	2	2.4	1	1.2
Primary School	1	1.2	1	1.2

The majority of respondents from Groups BAEP & AIP were either currently single or separated/divorced (76.8% & 76.2% respectively), Australian born, with some high school qualifications. Again, there was no appreciable difference between the two intervention groups on these demographic characteristics.

SUBSTANCE USE AND DEPENDENCE

HISTORY OF AOD USE

The average age of current presentation to the TC was 34 years (SD 7.7) for males and 32 years (SD 7.5) for females. Consistent with previous studies, (Holt, Ritter, Swan, & Pahoki, 2002; Stastny & Potter, 1991), alcohol predated illicit drug use, with participants reporting the starting age for alcohol as 13.1 and 12.8 years of age for BAEP and AIP respondents respectively. Given that the majority of the participants were dependent drug (i.e., primarily heroin, cannabis and amphetamine) users it is not surprising that regular use for these substances occurred earlier than regular alcohol use.

Table 3: Average age of regular use for main drugs by treatment group

Age at regular use (years)	BAEP (N=82)		AIP B (N=84)	
	Mean	SD	Mean	SD
Alcohol	15.5	7.1	16.2	5.4
Cannabis	13.9	8.1	14.2	6.5
Heroin	13.7	11.5	13.2	11.9
Amphetamines	15.7	10.8	16.0	10.4

Age of regular use was lowest for Heroin across both intervention groups, with a wider variance of responses accounting for the larger standard deviations. Cannabis users also reported regular use from an early age, with less variation in years. Amphetamines and alcohol users reported regular use from their mid-teens.

ALCOHOL AND DRUG USE AT INITIAL PRESENTATION TO TC

PRIMARY DRUG PROBLEM AT TREATMENT ENTRY

Participants were asked to nominate their primary drug problem; responses are summarised in the table below.

Table 4: Primary 'problem' drug by treatment group

Primary problem drug	BAEP (N=82)		AIP (N=84)	
	N	%	n	%
Heroin	30	36.6	23	27.4
Amphetamines	23	28.0	20	23.8
Cannabis	14	17.1	17	20.2
Alcohol	10	12.2	12	14.3
Sedatives/Hypnotics/Tranquilisers	3	3.7	5	6.0
Cocaine	1	1.2	0	0.0
Other Opiates/Analgesics	1	1.2	7	8.3

Heroin, Amphetamines and Cannabis dominated as the most frequently reported problematic illicit substances for participants from both intervention groups, followed by alcohol.

Although knowledge of primary problem drug is essential, most individuals who seek treatment for drug problems are poly drug users (Gossop, Browne et al., 2003) and it is therefore important to build a comprehensive picture of the AOD use of the current sample. A breakdown of drug classes used by participants in the 3 months prior to TC entry followed by the number of drug classes used by individual respondents, in order of frequency are presented in the table below.

Table 5: Drug class used in the 3 months prior to TC entry

	BAEP (N=82)		AIP (N=84)	
	n	%	N	%
Number of drug classes used in the past 3 months [^]				
1	16	19.5	11	13.1
2	14	17.1	16	19.0
3	22	26.8	21	25.0
4	11	13.4	19	22.6
5	12	14.6	11	13.1
6	6	7.3	5	6.0
7	1	1.2	1	1.2
Frequency of drug class used in past 3 months				
Alcohol	73	89.0	76	90.5
Cannabis	47	57.3	57	67.9
Amphetamines	42	51.2	46	54.8
Heroin	38	46.3	33	39.3
Sedatives/Hypnotics	30	36.6	34	40.5
Opiates/Analgesics	13	15.9	14	16.7
Cocaine	7	8.5	7	8.3
Hallucinogens	3	3.7	4	4.8
Barbituates	2	2.4	1	1.2
Inhalants	2	2.4	2	2.4

[^]Including alcohol, and pharmacotherapy if used in conjunction with illicit substance

At initial presentation, over 84% of study participants were polysubstance users, reporting use of two or more drug classes in the past 90 days and over a quarter of participants from each treatment group reporting use of three different drug classes. These findings are consistent with findings from the Australian Treatment Outcome Study (ATOS) in their 2002

study of Victorian heroin users, demonstrating that the current sample is representative of the general drug treatment seeking population (Holt et al., 2002) within Australia.

Eighty-nine percent of the BAEP group and 90.5% of the AIP participants reported using alcohol in the 3 months prior to intake. The most frequently reported illicit substances were cannabis, amphetamines and heroin.

Psychotropic Medication

A large number of participants (n=148, 89%) reported experiencing a significant episode of psychological or emotional problems in the 30 days prior to TC entry, 89 (60%) of whom had been using or were prescribed medication for treatment within that period.

ALCOHOL CONSUMPTION AND DEPENDENCE

Alcohol was used by 149 of the 166 participants in the 90 days prior to initial presentation. The table below provides greater detail on the nature of alcohol use, such as the number of drinking days and average number of drinks per drinking day; population percentages of use above the NHMRC safe drinking threshold (NHMRC, 2009) and SADQ dependency scores for the participants of each intervention at initial presentation.

Table 6: *Alcohol consumption and dependence in the 90 days prior to entering the TC.*

	Group BAEP (N=82)		Group AIP (N=84)	
	n	%	n	%
Number of days (any) alcohol use				
0	9	11.0	8	9.5
1-30	31	37.8	21	25.0
31-60	10	12.2	22	26.2
60-90	32	39.0	33	39.3
Total	82	100.0	84	100.0
Percentage drinking above NHMRC safe drinking levels#				
	85.4		86.9	
	M	SD	M	SD
Average number of drinking days in previous 90 days				
	41.26	(36.3)	50.0	(34.2)
Average drinks per drinking day				
	13.4	(18.1)	15.3	(12.9)
Average SADQ dependency scores				
	18.7	(16.7)	21.5	(14.2)
Percentage above SADQ clinical threshold@				
	21	25.6%	24	28.6%

NHMRC safe drinking levels recommend no more than 2 standard drinks per day for both males and females

@ A score greater than 30 indicates severe alcohol dependence

Although the average number of drinking days was 41 and 50 days out of the previous 90, for BAEP & AIP participants respectively, reported number of days of alcohol use were reasonably equally distributed across the three quartiles of 1-30, 31-60 and 60-90 days, with a small proportion from each group reporting no alcohol use at all. Average standard drinks per drinking day were high (13.4 & 15.3 respectively), with the majority of participants in each group drinking well above safe drinking guidelines (85.4% & 86.9% for participants in BAEP & AIP respectively). Approximately a quarter of participants from each intervention group scored above the cut off score for dependency (i.e., 30) on the SADQ.

PREVALENCE OF CO-OCCURRING ALCOHOL AND ILLICIT DRUG USE

Previous research has demonstrated that drug users tend to use or be dependent on multiple illicit drugs as well as have a comorbid alcohol dependency. The following table outlines average baseline dependency scores for the nominated “most problematic” drug and corresponding alcohol dependency scores for each illicit drug class, including the percentage of individuals who scored >30 on the SADQ, indicating comorbid clinical alcohol dependency.

Table 7: Average severity of drug dependence score by drug class& percentage reporting clinical alcohol dependence

Drug class	Group BAEP (N=82)				Group AIP (N=84)			
	n	SDS Mean	SD	% above clinical alcohol dependency threshold	n	SDS Mean	SD	% above clinical alcohol dependency threshold
Heroin	30	12.5	(2.5)	10.0	23	11.5	(3.2)	0.0
Cannabis	14	9.8	(4.7)	28.6	17	8.1	(3.9)	29.4
Amphetamines	23	9.5	(3.7)	17.4	20	8.5	(4.3)	35.0
Cocaine	1	1.0	(0.0)	100.0	0	0.0	(0.0)	0.00
Sedatives/hypnotics tranquilisers	3	11.7	(2.0)	66.7	5	8.1	(6.2)	60.0
Other opiates	1	10.6	(0.0)	0.00	7	9.5	(3.3)	42.9

It is clear from the above table that a large percentage of individuals who are dependent on cannabis, amphetamines or sedatives also report alcohol dependency. This finding is consistent with previous work (Gossop, Marsden et al., 2003).

TREATMENT ATTENDANCE

EIGHTY-THREE PERCENT OF THE BAEP PARTICIPANTS ATTENDED BOTH SESSIONS; THIS IS IN CONTRAST TO 68% WHO COMPLETED THE 5 SESSION AIP TREATMENT. REASONS FOR MISSED SESSIONS WERE PREDOMINANTLY EARLY EXIT FROM THE TC, WHICH EXPLAINS THE LOWER NUMBER OF COMPLETERS OF THE LONGER INTERVENTION PROGRAM. IN ADDITION TO EARLY EXIT, OTHER REASONS CITED FOR THIS GROUP WERE REQUIREMENT TO FULFIL ROSTERED TC DUTIES WHICH CLASHED WITH AEP SESSION, CHILDCARE RESPONSIBILITIES OR COURT/MEDICAL APPOINTMENTS. PRIMARY OUTCOME ANALYSES

This study had two primary research questions. First, does participating in the AIP intervention result in significantly greater reductions in alcohol use (compared to standard treatment) amongst those attending treatment for a primary drug problem? Second, does participating in the AIP reduce the risk of relapse to drug use over and above standard treatment. We also interviewed participants about the role of alcohol in relapse in order to provide a more indepth understanding of this issue. Analysis of these three questions are reported below.

ALCOHOL USE OUTCOMES

This section describes the alcohol use outcomes for participants who had a primary drug problem (i.e., participants attending the TC for a primary alcohol problem were excluded from these primary analyses). Analyses were conducted on the average number of standard drinks per drinking day as well as number of drinking days in previous 90 as collected by the TLFB.

Average number of drinks per drinking day (in previous 90)

Table 9 displays the average number of standard drinks consumed on any drinking day for each assessment point, by treatment group.

Table 8: *Average standard drinks consumed per drinking day in the 90 days prior to each assessment point.*

Assessment point	BAEP Group (N=72)		AIP Group (N=72)	
	Mean	SD	Mean	SD
Baseline	10.81	9.58	13.57	12.10
3-months post TC exit	9.27	20.29	9.08	16.14
9-months post TC exit	6.08	8.78	6.72	7.79

Repeated measures ANOVA revealed a statistically significant reduction in standard drink consumption over time, $F(2,141) = 18.08, p < .05$. This significant decrease in consumption occurred regardless of treatment group, i.e. there was no interaction between time and intervention, $F(2,141) = .62, p > .05$.

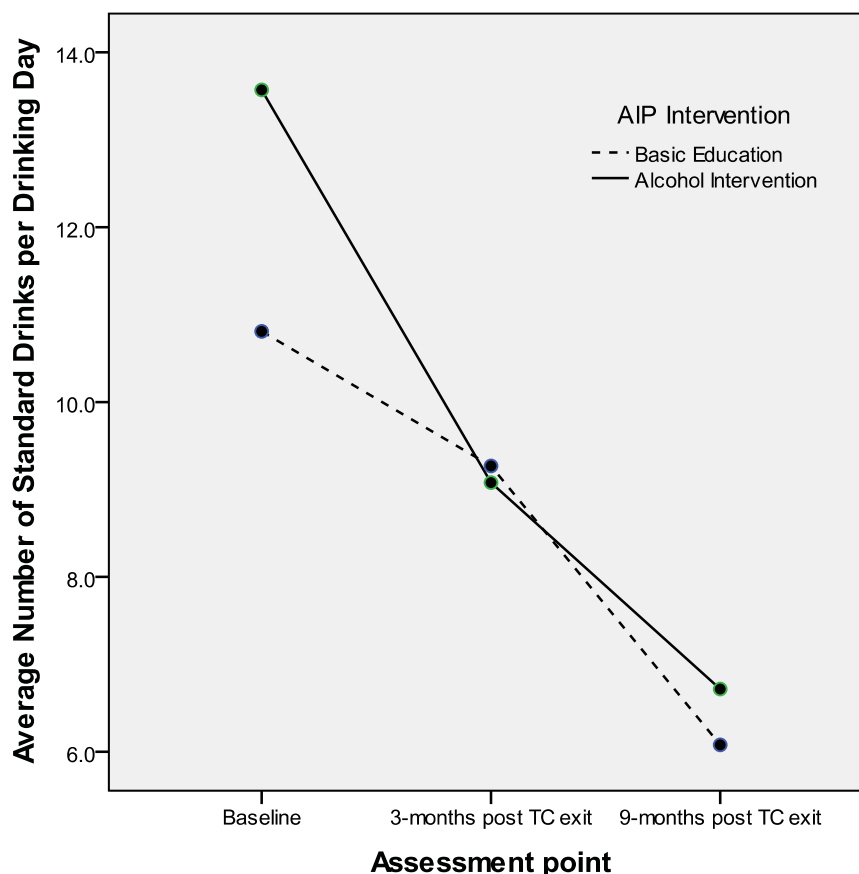


Figure 2 : Average number of standard drinks consumed per drinking day in the previous 90 days.

Number of drinking days in previous 90

Table 9: Number of drinking days in the 90 days prior to each assessment point.

Assessment point	BAEP Group (N=72)		AIP Group (N=72)	
	Mean	SD	Mean	SD
Baseline	36.44	35.27	47.39	34.87
3-months post TC exit	16.51	24.52	18.61	25.13
9-months post TC exit	16.31	21.84	20.40	23.53

Repeated measures ANOVA revealed a statistically significant reduction in the number of drinking days in the previous 90 days from baseline to 3-months post TC exit, $F(1,142) = 57.18, p < .05$, but no further significant reductions after this time, although the effect was sustained 9-months post TC exit. This significant decrease in consumption occurred regardless of treatment group ie. there was no interaction between time and intervention, $F(2,141) = .94, p > .05$.

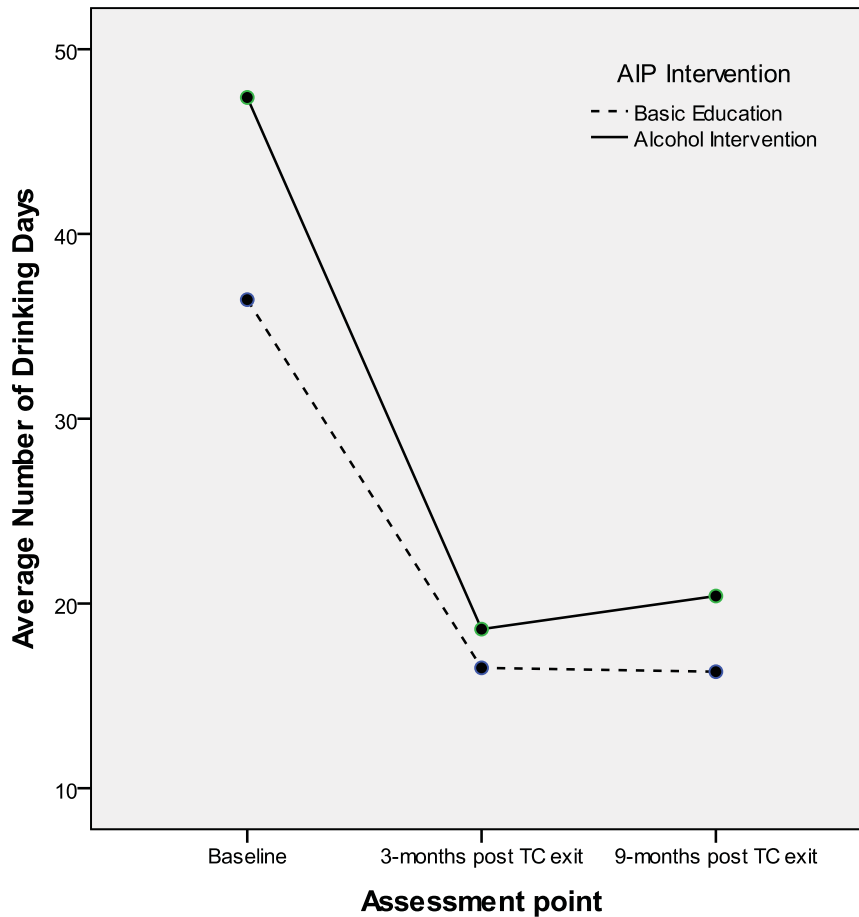


Figure 3 : Average number of drinking days in the previous 90.

Alcohol use within NHMRC safe drinking levels

At baseline, N=14 (19.4%) in the BAEP group & N=11 (15.3%) participants in the AIP group reported drinking within the NHMRC recommended safe drinking levels in the 90 days prior to TC entry. As can be seen below both groups reported an increase in the number of people who were drinking within safe drinking guidelines, although half of them were drinking above recommended levels 9 months after exiting the TC.

Table 10: Number of individuals drinking at a safe level as per the NHMRC recommended safe drinking levels in the 90 days prior to assessment.

Assessment point	BAEP Group (N=72)	AIP Group (N=72)
Baseline	14 (19.4%)	11 (15.3%)
3-months post TC exit	28 (38.9%)	24 (33.3%)
9-months post TC exit	32 (44.4%)	26 (36.1%)

RELAPSE TO DRUG USE

Some studies have demonstrated a relationship between consumption of alcohol and relapse to drug use after treatment (Gossop, Browne et al., 2003; Llorente del Pozo et al., 1998; McKay, Alterman, Rutherford, Cacciola, & McLellan, 1999; Singer et al., 2006; Stenbacka et al., 2007). Relapse prevention, and an interest in the potential role that alcohol may play, is a primary focus of the current study. The section below reports relapse rates in those who had a primary drug problem and reports on a thematic analysis of the question asked of participants at the 9 month follow up interview. Participants were asked to report whether they had relapsed and if so whether they felt that alcohol was a contributing factor. They were then asked to provide more detail regarding how they think alcohol may have contributed to their relapse.

The role of alcohol in relapse

The relapse rates for the 3 and 9 month follow up period are reported below. Note only individuals who reported at baseline that drug use was their primary problem (N=144) were included in the analysis although it should be noted many of those with a drug problem were also dependent on alcohol (see Table 7). Furthermore, in order to provide the exact percentages of those who relapsed the original dataset was utilised (i.e. non-imputed file).

Of the 136 people who were followed up three months after exiting the TC 81 (59%) had experienced relapsing to drugs and/or alcohol. Lapses were not included and hence relapse to drugs was defined as any use more than 3 times in the previous 90 days (or alcohol use at hazardous levels). A Chi Square analysis revealed a significant relationship between relapse and intervention group, $X^2(1, N=136) = 9.3, p < .05$. Examination of the table below indicates that those in the Alcohol Education group (comparison group) were more likely to relapse to drug use than those in the Alcohol Intervention group.

Table 11: *Participant relapse at 3 months after exiting TC*

	Basic Alcohol Education (N=71)		Alcohol Intervention (N=65)	
	n	%	n	%
Participants who relapsed in the previous 90 days?				
Yes	51	(71.0)	30	(46.0)
No	20	(29.0)	35	(54.3)

The relapse rate at 9 months after TC exit was very similar to that of the 3 month rate ie of the 130 people who were followed up nine months after exiting the TC 76 (55%) had experienced relapsing to drugs and/or alcohol. A Chi Square analysis revealed that there was no longer a significant relationship between relapse and intervention group, $X^2 (1, N=130) = 1.7, p>.05$. Examination of the table below indicates that those in the Alcohol Education group (comparison group) were more likely to relapse to drug use but this relationship was no longer statistically different.

Table 12: *Participant relapse at 9 months after exiting TC*

	Basic Alcohol Education (N=68)		Alcohol Intervention (N=62)	
	n	%	n	%
Participants who relapsed in the previous 90 days?				
Yes	44	(64.7)	30	(46.0)
No	20	(29.0)	35	(54.3)

Did alcohol play a contributing role in relapse to drug use?

Participants at the 9 month interview were asked whether they believed alcohol had played a role in their relapse. Although responses to this question would be variably interpreted more than half of the participants believed it had played a role in some way with although there were minimal differences between the intervention groups on this issue - 54% of the Alcohol Education group and 58% of the AIP group believed alcohol played a role in their relapse.

Qualitative analysis

A thematic analysis was conducted on the question of whether participants felt that alcohol contributed to their relapse and in what way?

Comments from the Alcohol Intervention participants demonstrated some level of insight into the underlying emotional and cognitive mechanisms involved in this process, linking alcohol with relapse, triggering conditioned motivations to return to their drug of choice. One amphetamine user stated his habitual response to alcohol as: *“alcohol is a big trigger for me; it is a depressant and lowers my inhibitions. I will crave amphetamines to pick me up.”*

Quotes from participants in the current study are consistent with a theory postulated by Llorente del Pozo et al. (1998) that the depressant effects of alcohol intoxication reinforce the use of a client’s drug of choice; with one of the current participants who had relapsed, stating that *“I became depressed due to drinking and I use speed to cope.....I make decisions that aren’t so good when drinking”*. The second reason proposed by the authors, that alcohol compromises cognitive function was further supported by participants in the current study, one of whom explained this his relapse was due to *“faulty thinking, poor judgement influenced by alcohol”*, whilst another reported that *“alcohol was a stepping stone to the other stuff....you’ve got that voice that tells you ‘This is not a good idea’, so you drink it into submission”*.

Promotion of awareness of the relationship between alcohol and cravings or relapse to drug of choice was a component of the Alcohol Intervention program, where Mindfulness techniques were utilised as a strategy to respond to cravings and negative emotional states. Participants were taught to ‘notice’ different cravings and urges without judgment; and these skills were practiced throughout the program.

An average of three months after TC exit, participants from both Groups were asked if they had noticed any connection between drinking alcohol and cravings (or use of) their previous drug of choice. Of those who had consumed alcohol, around half of the participants from each group (51% (Education group) & 55% (Alcohol Intervention group) respectively responded that they were aware of a relationship where *“alcohol increased the desire to use...brings down your guard”*. They had noticed that intoxication reinforced the use of their drug of choice, with one respondent noticing a *“big connection. When I get drunk I love*

speed to straighten me up and for the euphoria” The emphasis placed on the way that alcohol compromises cognitive function had a lasting effect on some of the AIP participants, who were able to explain the link, citing that *“alcohol leaves me depressed and that’s the kind of emotion I’ll use speed on”*. Consequently many respondents actively avoided alcohol or controlled their consumption because *“I put myself in a position with heroin if I’ve been drinking”*, whilst others justified their use of alcohol as a compensatory drug to manage cravings, whereby *“drinking alcohol dulls my cravings (for heroin) and helps me to get to sleep. I noticed the connection more after the program”*.

Following AOD treatment, studies have demonstrated that some individuals substitute alcohol for their drug of choice (Anglin et al., 1989; Simpson & Lloyd, 1978; Simpson & Sells, 1983). This can follow two main trajectories: where non-drinkers at baseline consumed alcohol at follow-up, or drinkers at baseline increased or maintained their alcohol consumption at follow-up (Cox, Comiskey, Kelly, & Cronly, 2006; Gossop, Browne et al., 2003; Ross, et al., 2004; Simpson, 1986; Simpson & Sells, 1983). Substance substitution is usually recognisable where participants who were abstinent at baseline, reported alcohol consumption at follow-up (Simpson & Lloyd, 1978). The nature of substitution was of interest to the current study. The question of actual substitution however, is more complex, although some participants were very clear about the role of alcohol in their lives, with one participant stating that *“Heroin is my drug of choice, alcohol is a substitute”*. As with the risk of relapse, substitution of alcohol for a participants’ drug of choice was discussed at length in the intervention group, compared with those attending basic alcohol education. The residual effects of this could be seen with regard to comments from both groups, where AIP participants demonstrated a clearer understanding of the role of alcohol in substitution, citing that *“It’s the same thing as using drugs. Substitution, one or the other. It lends to using other drugs”*.

In addition participants were asked what else might have contributed to them relapsing to drug use and to suggest what would have helped them overcome these problems. Responses to the first question were consistent between both interventions and were almost equally divided between social and emotional factors.

Socially, participants struggled with entrenched behaviours whereby *“being used to feeling that way”* meant that some felt they were *“pretty much destined (to relapse)”*. Returning to the same social environment meant that many were tempted to return to old ways, such as *“using with my brother. That’s how we socialise”*. Others left the TC to face circumstances that were very different

to their pre-TC lives, *“I lost custody of my children, my husband leaving me; I just felt like it was little old me against the world”*, resulting in difficulty adapting to the changes and feelings of loss.

Additionally, there was a sub-category of participants from both groups who tried to *“use recreationally”*, testing themselves, only to relapse and struggle to recover, highlighting the need to emphasize the risks associated with *“thinking you could just use and it wouldn’t get a hold of me again”*.

Emotionally, participants struggled with feelings of depression, loneliness and boredom once they left the TC environs. Some participants who left the TC before completing the full program cited that they relapsed as a result of *“being homeless, nowhere to go. Depressed, sad; wanted to block it out”*, lack of *“direction; isolation and boredom”* were also commonly cited reasons for relapse.

Consideration of what could have helped participants from both groups to overcome or manage their relapse result was a corollary to the contributing factors; more social and emotional support both from the TC in relation to re-entry into the community and professional counselling, as well as the broader issue of improved relationships and greater support from family members and peers.

Post-TC support for residents who completed the entire program by the TCs was considered by participants to be excellent, with one ex-resident now living in supported accommodation stating that his ongoing abstinence was *“because I’m still part of the program, and because I live with guys who were there too. I stand to lose friendships if I lapse. I’ll have chucked away 2 years of my life”*. In contrast, study participants who left the TC early and did not complete the full program reported receiving little support, stating that *“coming out of a house of 80 people to nothing was very overwhelming. There was no support, you’ve got to fend for yourself. It’s very abrupt.*

SECONDARY OUTCOME VARIABLES

The primary focus of this study was on alcohol use and relapse to drug use however given the unique nature of this large dataset we report the findings in relation to changes in drug use for heroin, amphetamines and cannabis as well as changes in social and mental health functioning. Analyses are reported by group although it was not expected that the intervention would have differential effects on these variables given the primary focus of the AIP was on alcohol.

CANNABIS USE

This section describes cannabis use outcomes for the sub-group of participants who reported cannabis use in the 90 days prior to TC entry (n=104). Table 12 displays the average number of days cannabis use (out of the previous 90) for each assessment point, by treatment group.

Table 13: Average days cannabis use in the 3 months prior to each assessment point.

Assessment point	BAEP Group (N=47)		AIP Group (N=57)	
	Mean	SD	Mean	SD
Baseline	49.64	32.29	50.53	34.04
3-months post TC exit	18.79	30.08	10.09	20.51
9-months post TC exit	6.49	16.55	6.46	16.73

Prior to TC entry, cannabis users reported 49.6 and 50.5 days use over the previous 90. Repeated measures ANOVA revealed a statistically significant treatment effect reduction in cannabis use from both baseline to 3-months post TC exit, $F(1,102) = 93.90, p < .05$, and a further significant reduction from 3-month to 9-months post TC exit, $F(1,102) = 15.37, p < .05$. No overall interaction between time and group was found, $F(2,101) = 2.45, p > .05$.

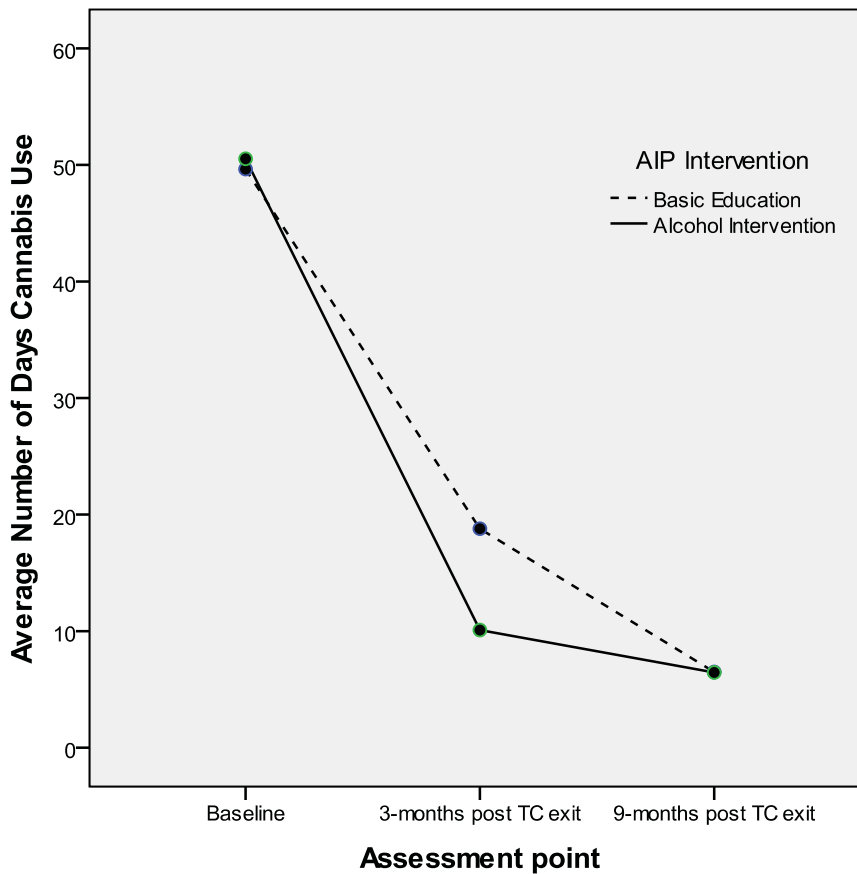


Figure 4 : Average number of days cannabis use for those participants who reported cannabis use at initial presentation.

HEROIN USE OUTCOMES

This section describes heroin use outcomes for the sub-group of participants who reported heroin use in the 90 days prior to TC entry. Table 12 displays the average number of days heroin use (out of the previous 90) for each assessment point, by treatment group.

Table 14: Average days heroin use in the 3 months prior to each assessment point.

Assessment point	BAEP Group (N=38)		AIP Group (N=33)	
	Mean	SD	Mean	SD
Baseline	54.47	33.85	44.39	35.77
3-months post TC exit	16.58	26.18	6.97	14.05
9-months post TC exit	14.76	26.77	7.85	17.06

Repeated measures ANOVA revealed a statistically significant reduction in heroin use from baseline to 3-months post TC exit, $F(1,69) = 82.95, p < .05$, but no further significant reductions after this

time, although the effect was sustained 9-months post TC exit. The interaction between heroin use over time and AIP intervention group was not significant, $F(2,68) = .10, p > .05$.

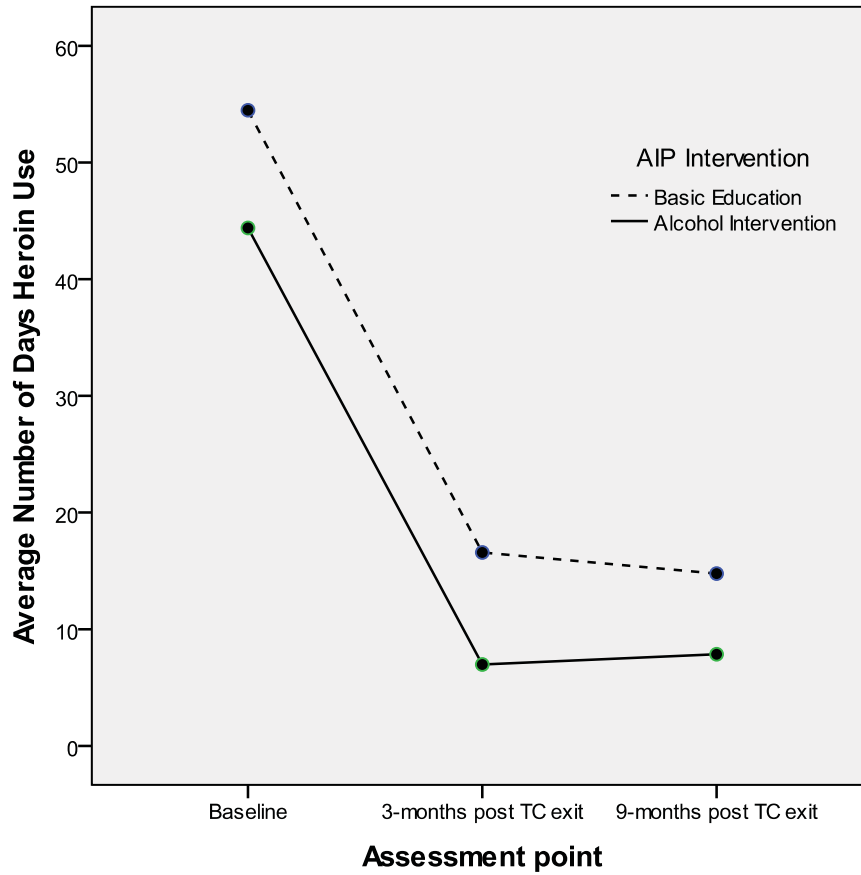


Figure 5 : Average number of days heroin use over the previous 90 for those participants who reported heroin use at initial presentation.

AMPHETAMINE USE OUTCOMES

This section describes amphetamine use outcomes for the sub-group of participants who reported amphetamine use in the 90 days prior to TC entry. Table 13 displays the average number of days amphetamine use (out of the previous 90) for each assessment point, by treatment group.

Table 15: Average days amphetamine use in the 3 months prior to each assessment point.

Assessment point	BAEP Group (N=42)		AIP Group (N=46)	
	Mean	SD	Mean	SD
Baseline	33.64	29.66	37.26	29.77
3-months post TC exit	6.33	12.12	2.39	4.27
9-months post TC exit	2.43	6.19	2.07	4.97

Repeated measures ANOVA revealed a statistically significant reductions in amphetamine use from both baseline to 3-months post TC exit, $F(1,86) = 101.74, p < .05$, and a further significant reduction from 3-month to 9-months post TC exit, $F(1,86) = 4.98, p < .05$, collapsed across groups. However, the interaction between amphetamine use over time and AEP intervention group was not significant, $F(2,85) = 2.16, p > .05$.

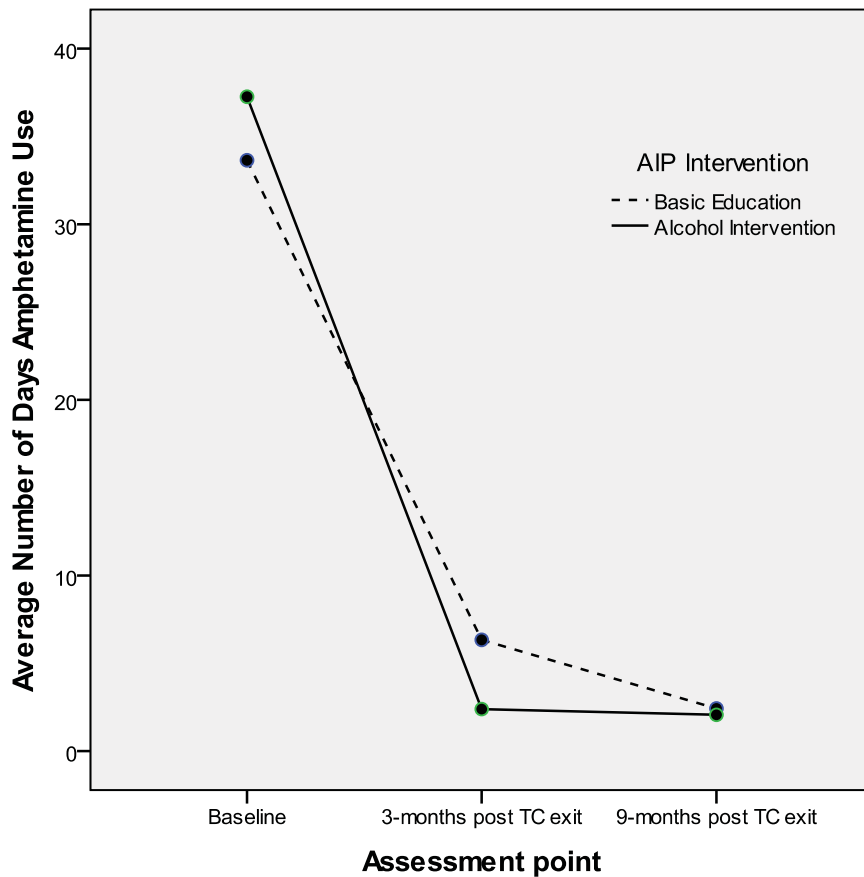


Figure 6 : Average number of days amphetamine use for those participants who reported amphetamine use at initial presentation.

SOCIAL FUNCTIONING

Repeated measures ANOVA revealed a statistically significant increase in social functioning (ie lower scores equates to increased social functioning as measured by the OTI) from baseline to 9-months post TC exit $F(2,163) = 63.39, p < .05$, regardless of treatment group i.e., the interaction between social functioning over time and intervention group was not significant, $F(2,169) = .64, p > .05$.

Table 16: Social functioning at each assessment point.

Assessment point	BAEP Group (N=82)		AIP Group (N=84)	
	Mean	SD	Mean	SD
Baseline	20.55	7.38	19.42	6.90
3-months post TC exit	15.12	8.01	14.26	6.56
9-months post TC exit	12.86	7.30	12.94	6.01

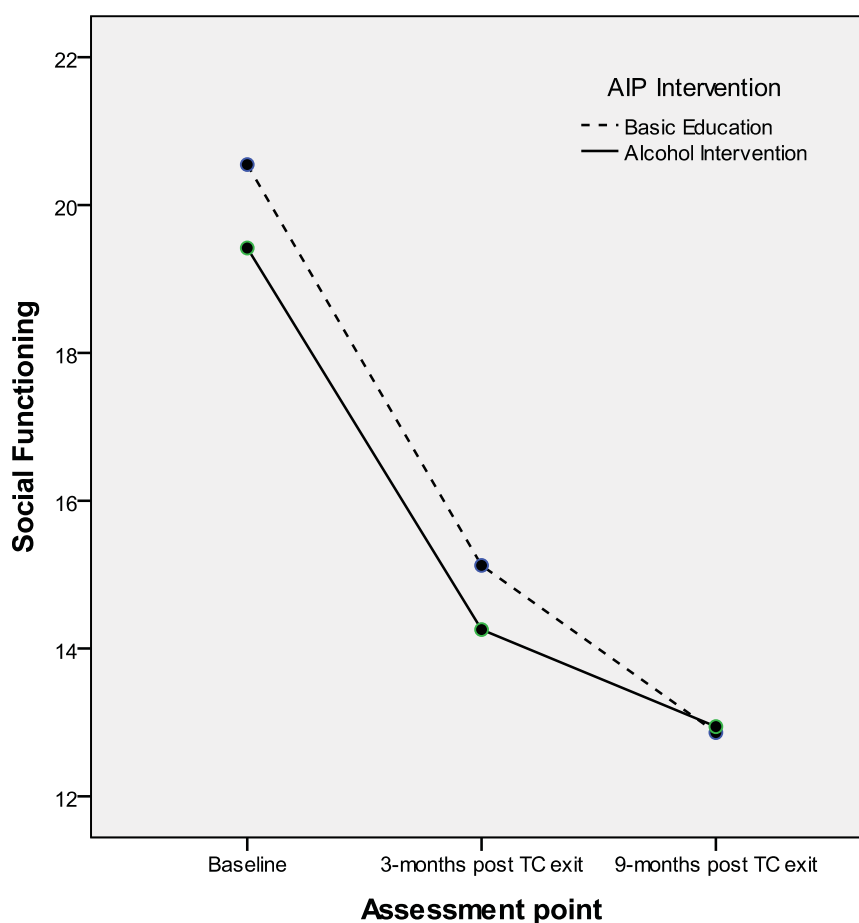


Figure 7 : Level of Social functioning at each assessment point.

MENTAL HEALTH FUNCTIONING

The mental health subscale of the ASI includes a question regarding number of days in the previous 30 days where the participant has experienced significant psychological problems. This question was utilised to assess changed in mental health functioning post TC exit. Repeated measures ANOVA revealed a statistically significant reduction in number of days experiencing psychological problems from baseline to 3-months post TC exit, $F(1,136) = 49.61, p < .05$ and the effect was sustained 9-months post TC exit. The interaction between psychological problems over time and intervention group was not significant, $F(2,135) = .04, p > .05$.

Table 17: Average number of days out of 30 where psychological problems are experienced in the 3 months prior to each assessment point.

Assessment point	BAEP Group (N=73)		AIP Group (N=65)	
	Mean	SD	Mean	SD
Baseline	23.32	10.64	21.12	11.38
3-months post TC exit	14.08	12.30	12.08	11.82
9-months post TC exit	11.62	11.88	10.14	11.42

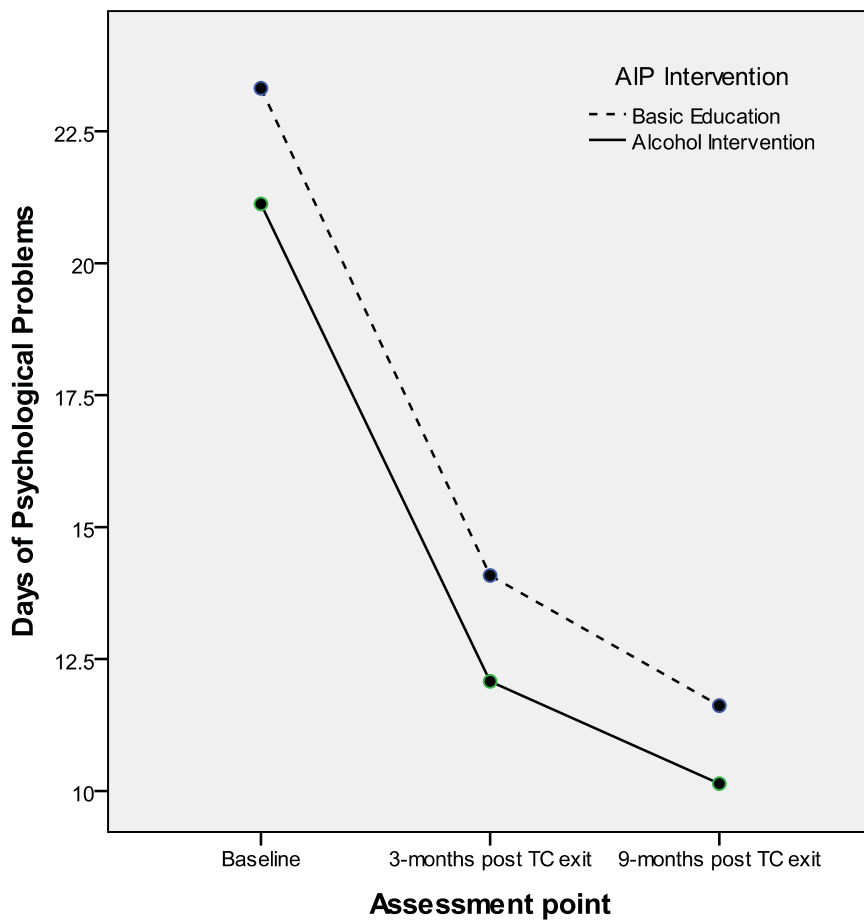


Figure 8 : Number of days out of 30 in which psychological symptoms were experienced at the three assessment points.

SATISFACTION WITH THE INTERVENTION

Immediately after the final session of the groups, clients were asked to report their satisfaction with the relevant responsible drinking program, utilising a global well validated measure, the Client Satisfaction Questionnaire (CSQ). Total scores on the CSQ range from 0-32; higher scores indicate higher satisfaction with the program. Participants from each treatment group reported remarkably similar average CSQ scores (M 24.2, SD=4.2; M 24.2, SD=3.7 for Education & Intervention group respectively). Utilising tri-level categorisation proposed by the original authors of the scale (Larsen, Attkisson, Hargreaves, & Nguyen, 1979), where scores 8-20 indicated low satisfaction, 21-26 indicated medium, and 27-32 represented high satisfaction, both groups involved in the current study reported Medium satisfaction with their respective programs.

Closer consideration of the key CSQ question referring to satisfaction with the specific program, revealed minimal differences again between respondents from the two treatment programs, with the majority (81.3% and 83.8% of respondents from groups BAEP & AIP respectively) indicating that they were either “*mostly satisfied*” or “*very satisfied*” with the program that they attended. When asked to indicate on a scale of 1 (none at all) -10 (really valuable) how much benefit they received overall from their respective program, responses from both groups varied little, with BAEP participants reporting an average 5.9 (SD 2.7) compared to AIP participants who reported a slightly higher 6.2 (SD 2.8).

Table 18: *Satisfaction with the treatment program*

<i>Q: How satisfied are you with the Alcohol Intervention you have received?</i>	Basic Alcohol Ed. (N=82)		Alcohol Intervention (N=84)	
	n	%	n	%
Quite dissatisfied	2	2.7	2	3.3
Indifferent or mildly dissatisfied	12	16.2	8	13.1
Mostly satisfied	41	55.4	31	50.8
Very satisfied	19	25.7	20	32.8
Total	74	100.0	61	100.0
Missing	8		23 [^]	
Total	82		84	

[^] The large number of missing responses for Group B represents the natural attrition associated with the longer duration of the course (5 weeks), as opposed to Group A which was conducted over a 2 week period.

Comments from participants reflected an overall positive opinion of each program, with participants reporting that “*(The AIP) was one of the only times we spoke about alcohol...*”, whilst those who had not previously received alcohol education reported greater “*awareness of the effects alcohol can have on a person*”. Considering the high prevalence of alcohol use prior to intake and previously reported comorbid alcohol and substance dependence experienced by many of the study participants, attention to the risk of relapse triggered by alcohol misuse and/or substitution of alcohol in treatment planning is warranted.

Risks to health, made a strong impression on BAEP participants, whereas those in the AIP group responded more to “*mindfulness*” and “*meditation*”, assisting participants with their “*inner feelings and...emotions*”. The main negative client feedback originated from a small number of participants with a primary alcohol problem from both groups (N= 22), who reacted strongly against the premise of the AIP, stating that “*it’s not for alcoholics*” and rejecting the notion of moderate alcohol use. Some reported negative effects from the group discussions around alcohol use, especially the standard drinks exercise: Some individuals reported that “*due to discussing it (alcohol), it brought up some really bad cravings*”, whilst others reacted against the harm minimisation and moderate drinking messages, stating that “*for an alcoholic this is not a good program for me....drinking has ruined a big part of my life and I don’t need to relive this through these groups*”. Facilitators responded to participants’ concerns in regard to cravings by asking participants to view them as an opportunity to practice Mindfulness, rather than a problem, but many individuals with primary alcohol problems still found that “*the program didn’t meet my personal needs of abstinence. I found the notion of moderate drinking dangerous and contrary to my endeavours to remain sober*”.

Additional negative comments centred on the fact that many study participants “*already knew the information covered*” in the basic alcohol education sessions, and the timing of the sessions, which were conducted during the evening at one of the two TCs. Participants from that TC resented the loss of free time, reporting that “*it (free time) is very precious...don’t intrude on free time*”. This posed particular difficulties for parents who were involved in evening activities with their children and resulted in loss of two participants from the study and necessity to provide make up sessions to participants, to ensure that all content was covered.

Lasting impressions of the AIP

Nine months after leaving the TC, 75% of the BAEP participants and 69% of AIP participants responded to the question: “What did you learn that has stayed in your mind since – what has been most helpful?”. General information such as “*how women can’t drink as much as men*” and “*standard drinks, they are less than you think*” was most commonly cited by 57% of the former group and was the second most commonly recalled content by the latter (31%). Health risks associated with alcohol, such as “*how alcohol affects your physical health, the photos of the liver have stayed in my mind*” was recalled by 39% of BAEP respondents and 14% of AIP respondents, but the risk of “*the combination of drugs and alcohol*” (potentiation), an issue specific to drug users of both prescription and non-prescription drugs, was only noted by 1% and 3% of each group, suggesting a need for greater emphasis in each program.

Nine months after TC exit, the most commonly cited helpful component of the AIP was the mindfulness skills training, which comprised a key part of the final 3 sessions of the program and were of lasting interest to 42% of participants (refer table below); especially as a strategy to manage emotional states and cravings, promoting an awareness of “*feelings and thoughts*” and bringing their emotions and impulses “*back to the moment*”. Many participants continued to practice mindfulness on a regular basis, maintaining that “*some of the mindfulness has become automatic. (It was) so helpful compared to alcohol awareness. If just alcohol awareness, I’d still be drinking.*” Interestingly, other strategies that were taught specifically to the AIP group, such as drink refusal assertiveness and planning for management of high risk situations via development of a drinking plan were not commonly cited 9-months after TC exit, nor were the influence of challenging the positive expectations of alcohol use (6%, 2% and 5% respectively). There was also no specific mention of the post-program support (therapeutic letters and telephone counselling).

Although the mindfulness skills had a broad application with licit and illicit drug use, other participants also related their mindfulness skills to alcohol consumption: “*...to be mindful of how I’m feeling, how things affect me when I do drink, why I am drinking.*”. It is therefore recommended that in future, facilitators place a greater emphasis on the benefits of the mindfulness component of the AIP to drug users in order to further engage those who did not identify with the emphasis on alcohol in the program.

Table 19: *Key components of AIP recalled 9-months after TC exit*

<i>Q: What did you learn that has stayed in your mind since?</i>	9 months post TC exit			
	A	%	B	%
General information about alcohol	40	57.1	20	31.3
Health risks of alcohol	27	38.6	9	14.1
Potential between alcohol and drugs	1	1.4	2	3.1
Risk of relapse via alcohol use	2	2.9	2	3.1
Mindfulness/meditation	1	1.4	27	42.2
Assertiveness			4	6.3
Alcohol expectancies			3	4.7
Drinking plan			1	1.6
Total number of responses	70		64	

DISCUSSION

The results of this study indicate that individuals with a primary drug problem, attending residential drug treatment, generally responded positively to a specific intervention regarding responsible drinking. Regardless of treatment allocation (i.e., standard alcohol education or a skill based alcohol intervention), participants reported statistically significant and clinically relevant reductions in alcohol consumption (frequency and amount consumed) three and nine months after exiting the TC. Importantly, those who participated in the skill based alcohol intervention were less likely to relapse to drug use (3 months after exiting the TC) this trend remained at 9 months but was no longer significantly different by group. Qualitative data allowed us to fully investigate participant's experiences of the program. On the whole participants were highly satisfied with the programs and found both interventions to be useful, although those who had a primary alcohol program felt that it did not match their needs (as we had anticipated). In particular participants who were in the skill based program remarked on the usefulness of mindfulness and understanding the link between alcohol and relapse to drug use. At least half of the participants from both groups reported that alcohol may have contributed to their relapse to drug use. Qualitative analysis revealed that many participants were now aware of the link between alcohol and relapse to drug use and some reported that they often substituted alcohol for their primary drug.

Although not the primary focus of the study we reported on outcomes related to the three most frequently used drugs – heroin, cannabis and amphetamines. We found significant reductions in drug use (3 and 9 months after exiting the TC) across all three drugs most notably in the case of amphetamines, regardless of treatment allocation. We also found significant increases in social functioning and reductions in mental health symptoms (irrespective of treatment intervention) at the 3 and 9 month follow up.

The high levels of relapse following drug treatment are well known (see Simpson, 1986; Ross et al., 2004). The rates vary considerably depending on treatment type and definitions of relapse, some studies have reported rates as high as 75% (Simpson, 1986). In the current study the relapse rates for participants attending drug treatment was 59% (3 months after exiting TC) and 55% nine months after exiting treatment. An important and promising finding is that relapse rates were significantly lower at the 3 month assessment point in those

individuals who had participated in the Alcohol Intervention. This finding suggests that specifically addressing alcohol in treatment with a focus on relapse prevention, the link between alcohol and drug use, mindfulness and possibly challenging alcohol expectancies is an effective way to reduce relapse to drug use. There is some support for this notion in the literature (see Steinbacka et al., 2007) however interestingly it appears to have received less attention than is perhaps warranted given the potential harms of concurrent alcohol use with drug use. It is unclear why the reduced relapse rate was not sustained at the nine month assessment point it could be that other factors became more important in relation to contributing to relapse (ie social and emotional factors). Our qualitative data supports the idea that emotional and social support for participants once exiting the TC is critical.

Reports from clients indicated that the mindfulness component of our alcohol treatment intervention was very helpful and many reported continuing to use mindfulness techniques once leaving the TC. Mindfulness is emerging as a viable approach for the treatment of drug dependence with preliminary support for its efficacy in the reduction of substance use (see Bowen, et al., 2009). It is believed that by focusing attention on drug-related thoughts, mindfulness increases awareness of substance use patterns and can interrupt an automatic craving reaction through the observation of, and decision to not act upon, these thoughts. Witkiewitz, Marlatt, and Walker (2005) suggest that increased mindfulness may be related to a decreased likelihood to engage in impulsive behaviours. Given the strong findings that individuals with drug dependency report higher levels of impulsivity than general community samples mindfulness may prove to be a critical treatment ingredient (Staiger et al., 2007).

Strengths and Limitations

This study comprises one of the largest follow up studies of individuals attending treatment for drug dependency within a TC setting in Australia. This unique data set affords the opportunity to examine long term outcomes in addition to investigating the primary research questions. We do however have some concerns regarding the contamination effects of running a RCT within a therapeutic community. TC staff and participants were asked not discuss the content of the program with other staff and clients. We recognise that given the potential contamination effects our treatment effect was possibly diluted. A further issue was that we were unable to conduct a no intervention control group as one of the TCs had an existing alcohol education program and hence it was considered unethical to withdraw this as

part of the TC standard treatment. This results in us not being able to disentangle the effects of the alcohol education group from the general TC treatment. In this respect, our recommendation is that TC treatment should include basic alcohol education at the very minimum. Another issue which is discussed in detail below is that the alcohol education program was developed for those with a primary drug problem and hence may not be that appropriate for those with a primary alcohol problem as the focus is on responsible drinking rather than abstinence.

Conclusions and Treatment Implications for other treatment agencies

As reported in the literature and further substantiated by the current study alcohol misuse amongst drug users may contribute to relapse (Gossop et al., 2003). Alcohol when used concurrently with drugs can also increase risk for overdose. Some of the participants reported being surprised at the link and others welcomed discussion about alcohol within the TC program. The strong finding that AIP participants were significantly less likely to relapse within the first 3 months after leaving the TC is an important finding. Further work needs to be done in order to disentangle the effects of the treatment and to assist clients to sustain those treatment gains in the long term.

The proportion of clients with primary alcohol dependence in residential programs has been increasing, and this has led to a renewed focus on alcohol. However, these residents typically choose a life-long abstinence goal, and consequently few treatment agencies encourage or facilitate discussion about how to incorporate moderate alcohol use into one's life post treatment. The current intervention was developed to raise awareness of the risks of alcohol misuse when recovering from drug treatment. Many clients with a primary drug problem do not identify alcohol as an issue, and yet there is considerable evidence to indicate that alcohol may contribute to relapse to drugs. Yet, many treatment programs do not address the use of alcohol as a relapse trigger.

The review of the literature and the outcomes from this study reinforce the need for residential alcohol and other drug treatment agencies to include a specific alcohol intervention in their programs. Ironically, this is especially important for those who do not indicate a primary dependence on alcohol, but who are vulnerable to relapse in recovery when they drink alcohol to intoxication. Ideally this will include some level of education

about alcohol and its effects, and most importantly, allow for a discussion around clients' alcohol use following treatment and its potential role in relapse. While this may be obvious or assumed for those with alcohol dependence issues, it is particularly important among clients who don't identify alcohol as their primary drug of concern, or a drug of concern at all, and rarely receive support in how, if at all, they can incorporate the moderate use of alcohol into their lives post treatment.

While the most effective components of alcohol education remains unclear following this study, the qualitative results and client feedback indicate that at a minimum, residential programs should include basic alcohol education, along with an opportunity to discuss the link between drinking alcohol in recovery and the increased risk of relapse. Basic facts about alcohol including its effects on the body and BAC, standard drinks, guidelines etc, were not uniformly known to all participants in this study. Consequently, education will lead to greater awareness for some, and serve as a reminder to others, while a more interactive style of facilitation will allow for discussion and the application of the information to each individual. Given the issues are different when alcohol is the primary drug of dependence, caution should be taken if running this program with these clients, and it may be necessary to hold separate and different groups for these residents. Furthermore, mindfulness skills training and other skill based modules should also be considered for all residents, as a way of managing or regulating emotions and the cravings often associated with relapse. These elements should be included early enough in treatment programs to expose the greatest number of residents to them, whilst acknowledging that they may be most useful just prior to a resident's exit. This could be achieved by introducing these modules early on, and providing booster sessions at later stages or as part of client follow up.

In conclusion this study constitutes the first RCT to investigate the effectiveness of an alcohol intervention for drug dependent users. Our findings suggest that alcohol may play a contributing role in relapse to drug use and that an intervention specifically developed to address alcohol is an effective way to reduce relapse to drug use. Further work is required in order to ensure that these effects are sustained in this group of individuals. It is possible that the potential risks of using alcohol whilst recovering from drug dependence have been underestimated and we are pleased to have contributed to the understanding of this complex issue.

DISSEMINATION OF FINDINGS - CAPACITY BUILDING

Information about the current study has been widely disseminated via conference presentations and staff presentations. A review paper has been submitted to *Addiction* and further papers reporting on the empirical findings are being prepared.

In order to build and strengthen capacity in the program staff from within the Therapeutic communities were trained to conduct some of the groups. Given our concerns about contamination effects within the therapeutic community TC staff only conducted the intervention program and were asked not discuss the content of the program with staff and clients who were not assigned to the intervention group. It is unusual for a RCT to be run within a TC setting we felt it was important to engage staff and build knowledge and capacity regarding the program right from the start.

Conference Presentations

Victorian Service Providers Conference, 2005. Responding to alcohol issues post residential treatment, Dr Stefan Gruenert, Neos Zavrou

Australasian Professional Society on Alcohol and other Drugs Conference, 2006. Development of an *Alcohol Intervention Program* for adults in residential treatment for alcohol or substance dependencies. Dr Stefan Gruenert, Dr Petra Staiger, Miranda Manning, Victoria Carr, Professor Alan Marlatt, Neos Zavrou

Winter School Conference, 2006. Putting Alcohol into Drug Treatment. Miranda Manning, Petra Staiger, Stefan Gruenert, Alan Marlatt.

Australasian Therapeutic Conference, 2007. Preliminary findings of an *Alcohol Intervention Program* for adults in residential treatment for alcohol or substance dependencies. Miranda Manning, Dr Petra Staiger, Dr Stefan Gruenert, Amelia Lake, Caroline Long, Professor Alan Marlatt

International Addiction Summit, 2008. An *Alcohol Intervention Program* for recovering drug users in residential treatment: preliminary findings. Petra Staiger, Miranda Manning, Stefan Gruenert, Caroline Long, Amelia Lake, Alan Marlatt

Australasian Professional Society on Alcohol and other Drugs Conference, 2009 Responsible Drinking Program for Recovering Drug Users. Dr Stefan Gruenert, Dr Petra Staiger, Miranda Manning, Amelia Lake, Caroling Long, Professor Alan Marlatt.

Presentations to residential drug treatment staff

In order to avoid any contamination effects we did not present information about the program to general staff at the TC until the completion of the intervention groups.

Responsible Drinking Program for Recovering Drug Users, 2009, 2010 Odyssey House Victoria

Responsible Drinking Program for Recovering Drug Users, 2009 2011 Windana Society

Publications

Overlooked and underestimated? Problematic Alcohol Use in Clients Recovering from Drug Dependence. Staiger, P.K., Carr, V., Long, C.M. & Marlatt, G.A. Submitted to Addiction

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