

**AN EVALUATION OF THE ODYSSEY HOUSE NSW
RESIDENTIAL REHABILITATION PROGRAM**

FINAL REPORT

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GLOSSARY OF TERMS

AIHW	Australian Institute of Health and Welfare
AoD	Alcohol and Other Drug
ATS	Amphetamine-type stimulant
EUROHIS-QoL8	8-item European Health Interview Survey Quality of Life index
GL model	Generalised linear model - a statistical technique ideal for data that is non-parametric and consists of counts
K10	Kessler 10 Psychological Distress Scale
K10+LM	Modified K10 as used in the present Evaluation
ME model	Mixed effects model –a statistical technique which incorporates fixed and random components
NADA	Network of Alcohol and other Drugs Agencies (NSW)
NHMRC	National Health and Medical Research Council
OH NSW	Odyssey House NSW
OTI-SF	Social functioning subscale of the Opiate Treatment Index
PLC	Progressive Learning Centre
SDS	Severity of Dependence scale
SES	Socio-economic status
SISI measure	Single-item social identification measure
TC	Therapeutic Community
TLFB	Timeline Followback Method
UTS	University of Technology Sydney
WHOQOL-BREF	World Health Organization Quality of Life Instrument -Abbreviated Version

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EXECUTIVE SUMMARY

This report documents the final outcomes of the “**Program Evaluation – Odyssey House (OH)**” project for the period ending December 16th, 2019.

BACKGROUND AND OBJECTIVES

The project aim was to evaluate the effectiveness of a residential rehabilitation program for individuals undergoing treatment for drug dependence.

Rationale

Therapeutic Community (TC) rehabilitation services for the treatment of problematic alcohol and other drug use have been in existence for many years, but major differences in resident cohorts and program content have meant that comparisons across programs are difficult. Odyssey House NSW (OH NSW) has been providing residential rehabilitation for problematic drug use for over 40 years but has not previously had an independent evaluation of treatment outcomes. This study is the first comprehensive assessment of treatment efficacy of this program.

Research Design

The OH NSW residential rehabilitation program was evaluated using three different research designs:

1. The Evaluation Project: a non-randomised, single arm, longitudinal study assessing treatment outcomes *after the program*, from intake to separation from the program, and then at 3, 6, and 12 months post program.
2. The Transition Project: a non-randomised, single arm, longitudinal study assessing treatment progress *during the program*, from intake to completion of Level 1, Level 2, Level 3 and Level 4. The Transition Project also assessed treatment progress according to the number of days that residents remained in the program.
3. The Qualitative Project: a semi-structured interview with residents assessing their experiences and reflections on the program which was conducted at separation, and at 3, 6 and 12 months post-program.

Participants

Participants consisted of individuals undertaking residential rehabilitation for substance dependence at the OH NSW treatment facility in Sydney during the period July 2017 to July 2018. Inclusion criteria were the same as those for entry into the TC: the participant was 18 years of age or over and could read and write in English. Residents who were eligible to skip one or more levels of treatment based on previous stays with the residential program were excluded from participating in the study. A total of 117 individuals comprised the sample for the Evaluation Project; a subset of 96 individuals provided data for the Transition Project; and 32 participants were interviewed for the Qualitative Project.

Procedure

Residents were invited to participate in the study by the research team within 4-6 weeks of entering the program. After consent was obtained, residents completed a series of

standardised questionnaires in hard copy. These questionnaires were administered again on completion of each treatment Level (1-4) during the program (Transition Project), and at separation and the follow up points of 3, 6 and 12 months post-program (Evaluation Project). Residents also took part in a semi-structured interview on program separation, and at the post-program follow up points (Qualitative Project).

Measures

The measures used in the present evaluation included the Severity of Dependence Scale (substance dependence), the K-10+LM (emotional distress), the EuroHIS-QoL8 (quality of life), and the Modified OTI-Social Functioning Scale (social adjustment). A modified Time Line Follow Back (drug use over previous four weeks) was also administered.

Data analysis

The quantitative outcome data were analysed using mixed effects and generalised linear modelling techniques. Chi-squares and t-tests were used to explore differences between early separators and treatment completers at baseline. Progress during the program was analysed using generalised linear models in the form of a series of generalised estimating equations. The qualitative data were analysed using a thematic analysis methodology, and themes compared across follow up points.

BASELINE SAMPLE CHARACTERISTICS

78 men and 39 women comprised the full sample of the Evaluation Project. 85% were Australian born, with an average age of 33 years. 67% of the sample left school before Year 12, and only 6% were employed on entry to the program. Most participants lived with their parents or relatives (34%), however 15% lived with a partner or children. 20% of the sample lived alone, with the remainder living with friends or being in custody.

Just over half the sample (52%) reported that they had been diagnosed with a mental health disorder. Depressive illness (35%), anxiety disorders (21%) and bipolar disorder (8%) were the most common diagnoses, with 25% of the sample reporting more than one mental health diagnosis.

The most commonly reported primary drug of concern was amphetamine-type stimulants (56%), followed by alcohol (23%) and opioids (12%), however 69% of the sample reported polysubstance use and 62% required withdrawal management before entering the program. They remained in treatment for an average of 167 days. 85% of the sample completed the Assessment level, 58% completed Level 1 and 26% completed Level 2.

Of the 117 individuals who gave consent to participate in the evaluation project, follow up data (questionnaires, interviews) were collected from 32 individuals on leaving the program, 25 individuals at 3 months, 21 at 6 months and 19 individuals at 12 months post-program.

EVALUATION PROJECT - Primary Outcome Analyses

Substance dependence and use: Overall, participants reported a significant reduction in their severity of dependence from intake to program exit, which was maintained at 3, 6 and 12 months post-program. 45% of those who nominated amphetamines as their primary drug

of concern were above the questionnaire cut-off for dependency at intake; none were above the cut-off at 6 or 12 months post-program. 33% of those nominating alcohol as their primary drug of concern were above the cut-off for alcohol dependency at intake, and that level did not change over time. However, there was a significant reduction in the number of standard drinks consumed and the number of days drinking alcohol between intake and program exit, and at each of the follow up points. There was a significant reduction in the number of days of cannabis use from program intake to program exit and from exit to three months follow up. However, this reduction was not maintained at 6 and 12 months.

Mood: At intake, approximately 75% of clients scored in the High or Very High Distress range. These scores reduced markedly by the end of the program, and remained improved at each of the follow up points, such that there were only 14% of clients in the High Distress range and 0% in the Very High Distress range by 12 months post-program.

Quality of life: Scores on the overall measure of quality of life (encompassing physical health, psychological health, social relationships and satisfaction with the environment) improved significantly from intake to separation from the program, and these significant gains were maintained at all 3 follow up time periods.

EVALUATION PROJECT - Secondary Outcome Analyses

Social and Occupational Functioning: Participants reported a significant improvement in their social relationships and social adjustment from intake to program exit. As with the quality of life and mood assessments, these scores remained significantly improved at 3, 6 and 12 months follow up. While there were few changes in employment status or receipt of income support, there was an increase in participation in tertiary level studies. No participants were studying at intake, however this increased to 9% on separation, 26% at 3 months follow up, and 25% at 6 months follow up.

TRANSITION PROJECT OUTCOMES

Data analysis showed that for all of the primary outcome variables (substance dependence, psychological distress, quality of life), participants showed significant improvement on transition to each level (1-4) when compared to their initial levels. These changes were also clinically significant according to the definition of Jacobson and Truax (1992), which supports the assessment process adopted by OH NSW in determining when residents are ready to move to the next phase of treatment.

Comparisons across levels showed that the largest improvements occurred up until Level 3, with relatively modest improvements in the main outcome variables occurring after that point.

Analyses exploring time in treatment showed that early separators were significantly worse off in terms of outcome. For example, the odds of being in a higher category of psychological distress when in the program for 90 days or less was 8.68 times greater when compared to those in the program for 365 days or more.

There was also some evidence of a plateauing of treatment gains between 270 and 365 days in treatment. These data suggest that most clinical improvements are likely to have been made by the 9 month period.

QUALITATIVE PROJECT OUTCOMES

The interviews conducted at program separation and at the three follow up time points revealed a range of perceptions and experiences of the OH NSW residential rehabilitation program. At separation, most participants reflected on the program very favourably. The key themes that emerged at this first assessment point were “Program Structure” and “Treatment Components”. Residents valued the routine and schedule of the program, and also the information they had been given on AoD use and mental health. While many residents could not identify any unhelpful aspects of the program at this point, those that did often referred to the program structure and routine – in this instance perceived as rigid and overly tough.

As the assessment period extended over the 12 month period, themes from the interviews gradually changed. At the 3 month follow up, participants referred to their use of “Coping Strategies” a great deal, as they were still relatively early on in their treatment journey – this theme didn’t emerge in later interviews. The use of “Communication Skills” was found in the data at 6 and 12 months follow up but not at 3 months, indicating that participants were meeting different challenges as time passed. However, the one theme that was present at all assessment periods was “Staying Clean”, with a particular focus on “Persevering with Treatment and Routine” at the 12 month follow up.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

In conclusion, this study constitutes the first independent evaluation of the Odyssey House NSW Residential Rehabilitation Program since its inception over 40 years ago. Overall, the data show that individuals can expect to make significant improvements in their drug use and dependence, mood, quality of life and social functioning by the time they separate from the program – provided that they do not separate in less than 90 days. However, data also showed that by about 9 months, there was a slowing in treatment response with those remaining in treatment making relatively fewer gains after this time point.

Analysis of follow up data showed that treatment gains were maintained over the next 12 months. Qualitatively, participants reported that the structure and routine of the TC program, while challenging, was also a key factor in their rehabilitation. We offer the following recommendations to be considered by service providers offering TC-based treatment for AoD:

1. Systems and procedures to allow follow up of participants once they have separated from the program is important. Obtaining consent from participants’ Next of Kin to be contacted if required would be valuable.
2. Review of treatment duration appears to be warranted, such that developing a shorter duration program (based on the 9 month optimal time point data) might assist service delivery.
3. The TC rules, responsibilities, routine and schedule are key components of the intervention. Although a number of participants found these elements challenging, there was a strong theme of support for providing such a structured environment.

1. INTRODUCTION

Odyssey House NSW (OH NSW) is a not-for-profit organisation that provides residential and community services for individuals experiencing problematic Alcohol and Other Drug (AoD) use. In the present report, problematic AoD use will refer to the usage of illicit drugs, licit drugs or related substances by an individual that leads to adverse social, financial and/or legal consequences. This report presents findings from an Outcomes Evaluation of the OH NSW residential program, as delivered between July 2017 and July 2019. The OH NSW program follows the Therapeutic Community (TC) model of treatment. This treatment approach facilitates the personal growth of clients in order to address the complex relational, psychological and legal issues that accompany problematic AoD use. The aim of this Evaluation is to assess whether participation in the OH NSW program improves the treatment outcomes of their residential clients, both during the program and subsequent to participation.

1.1 Background

Access to treatment for problematic AoD use is a public health issue in Australia and worldwide. In 2017, the global estimate for the rate of AoD treatment access for drug use disorders was only 1 in 7 individuals (United Nations Office on Drugs and Crime, 2019). Regarding alcohol use, 42% of countries worldwide report limited to non-existent treatment services for alcohol dependence (World Health Organization, 2018).

Compared to many other countries, Australia has relatively high levels of access to AoD treatment. However, a significant gap still exists between individuals who can, and cannot, access adequate services for assistance with their problematic AoD use. It has been estimated that more than 50% of Australian individuals who seek treatment for substance use disorders, including alcohol-related conditions, are not able to access the appropriate services (est. 52%-

76%; Ritter et al., 2014). A range of AoD treatment options are available for Australians, including drug withdrawal management, face to face and online counselling, pharmacotherapy, and rehabilitation (Australian Institute of Health and Welfare, 2019).

Ensuring a range of appropriate options are available for AoD treatment is one way in which the access gap in Australia can be addressed.

1.1.2 The TC approach to AoD treatment

Various forms of the TC approach have been employed to treat problematic AoD use for over 50 years (De Leon, 2000; Smith, Gates, & Foxcroft, 2006). A defining feature of the TC targeted to AoD use is the insertion of an individual into a highly structured group environment with a clear, equitable social hierarchy. Members of the TC, including a range of multi-disciplinary staff and other clients receiving treatment, work in unison to assist short-, mid- and long-term clients in developing personal accountability for their own choices and actions.

Within the last few decades, several comprehensive reviews have attempted to identify the effective components of TCs focused on AoD treatment (e.g., de Andrade, Elphinston, Quinn, Allan, & Hides, 2019; Magor-Blatch, Bhullar, Thomson, & Thorsteinsson, 2014; Perryman & Dingle, 2015; Vanderplasschen et al., 2013). Despite being a well-established method for AoD treatment, evidence for the effectiveness of the TC approach is mixed (e.g., Smith et al., 2006) which is attributable to some extent to the inherent difficulties in researching this area. Client demographics can vary greatly from one program/region/country to another, there are often very high attrition rates in AoD treatment of any kind, and TCs can vary hugely in their programs and structures. All of these factors makes comparing outcomes across TCs difficult (Smith et al. 2006). Therefore, the important research question for the present purposes is to

what extent clients undertaking the residential rehabilitation program at OH NSW are able to make changes in their problematic AoD use, and how well are they able to sustain those changes once they separate from the TC itself.

1.2 The OH NSW residential program

The residential clients of OH NSW are individuals over the age of 18 seeking treatment for problematic AoD use and co-occurring mental health issues (Odyssey House NSW, 2018). The duration of the program from first entry to completion is typically 12 months for full graduates (Pitts, 2016). The aim of the program is to provide a safe and supportive environment in which clients can develop the interpersonal skills important in the long-term recovery of individuals who experience problematic AoD use. The range of services delivered within the program are diverse, and include personalised support for mental and physical health issues, a withdrawal management unit, specialised therapy groups (e.g., gambling, domestic violence), a Parent's and Children's Program, and the Progressive Learning Centre (PLC), a registered on-site school that provides remedial numeracy and literacy education.

1.2.1 History

OH NSW is one of two Australian organisations based on the structure of the original American-based Odyssey House program (Pitts, 2016). During the 1960s, the Odyssey House approach was differentiated from other therapeutic communities in America by the mixture of staff who contributed to the running of these treatment facilities, as staff consisted of both treatment professionals and individuals with lived experience of drug dependence. The OH NSW residential program has been in operation for more than 40 years, while the community services component of the organisation has been in existence since 2017.

1.2.2 The treatment model of OH NSW

Within their existing residential and community services, OH NSW follows a stepped care approach, in which the delivery of AoD and mental health recovery-focused treatment and care is prioritised. To accomplish this, OH NSW offers their clients a range of AoD, mental health and psychosocial interventions within the community and residential arms of the organisation. The main advantage of this staged system is that the intensity of intervention delivery is personalised for each client and can be modified to accommodate the needs of even the most complex clients. The OH NSW stepped care approach also encourages clients to actively engage in their recovery journey and develop long-term coping skills for their problematic AoD use.

1.2.3 Guiding values of the OH NSW TC

The core guiding values of the OH NSW TC are conceptualised as a series of five “pillars” upon which the residential program is based: concern, responsibility, honesty, trust and love (Pitts, 2016). Concern refers to the act of involving others and yourself in the activities of OH NSW for the benefit of the TC. As individuals progress through the OH NSW program, they are provided with more and more opportunities to build accountability with staff and their peers, which results in them taking on greater levels of responsibility within the everyday functioning of the community as a whole. Practicing the values of honesty and trust are integral to successful program progression. By following these two values, individuals confront the self-sabotaging behaviours related to their problematic AoD use that are no longer serving them and become more comfortable with self-disclosure and vulnerability. Lastly, love is linked to the value of concern, and is likely to be experienced by individuals the longer they stay in residential treatment. In this context, love represents relearning how to care for others and for themselves.

1.2.4 The resident journey

Initially, individuals referred to the OH NSW residential program undergo an intake process which involves an initial assessment over the phone or face to face, a clinical review of the potential client's case, an in-person interview, and then admission to the TC itself (see Figure 1). Residential clients can be self-referred, or referred by their family, friends, health professionals, other service providers or via the criminal justice system. Residential clients can also be referred to the residential program via OH NSW community services, a pathway in line with the organisation's stepped care approach. In cases where potential clients are not eligible for the residential program at any stage of the intake process, these individuals are provided referrals to other AoD, mental health and other relevant services and organisations, including OH NSW community services. During the intake process, if client information emerges which could endanger the safety of other clients and staff already working within the residential program, such as a history of violence, sexual misconduct or arson, the potential client is ruled ineligible for residential treatment and referred onto a more appropriate service or organisation.

The aim of the thorough intake process into the OH NSW residential program is to ensure that entering the TC is the most appropriate option for the potential client's treatment needs. Entering residential treatment at OH NSW is generally reserved for the most complex client cases, as the intensive nature of the program requires a large commitment of time and resources by both the client, other residential clients and OH NSW staff.

Male clients are typically admitted to the Ingleburn location, while female clients, select male clients and clients participating in the Parents and Children program reside at the Eagle Vale location.

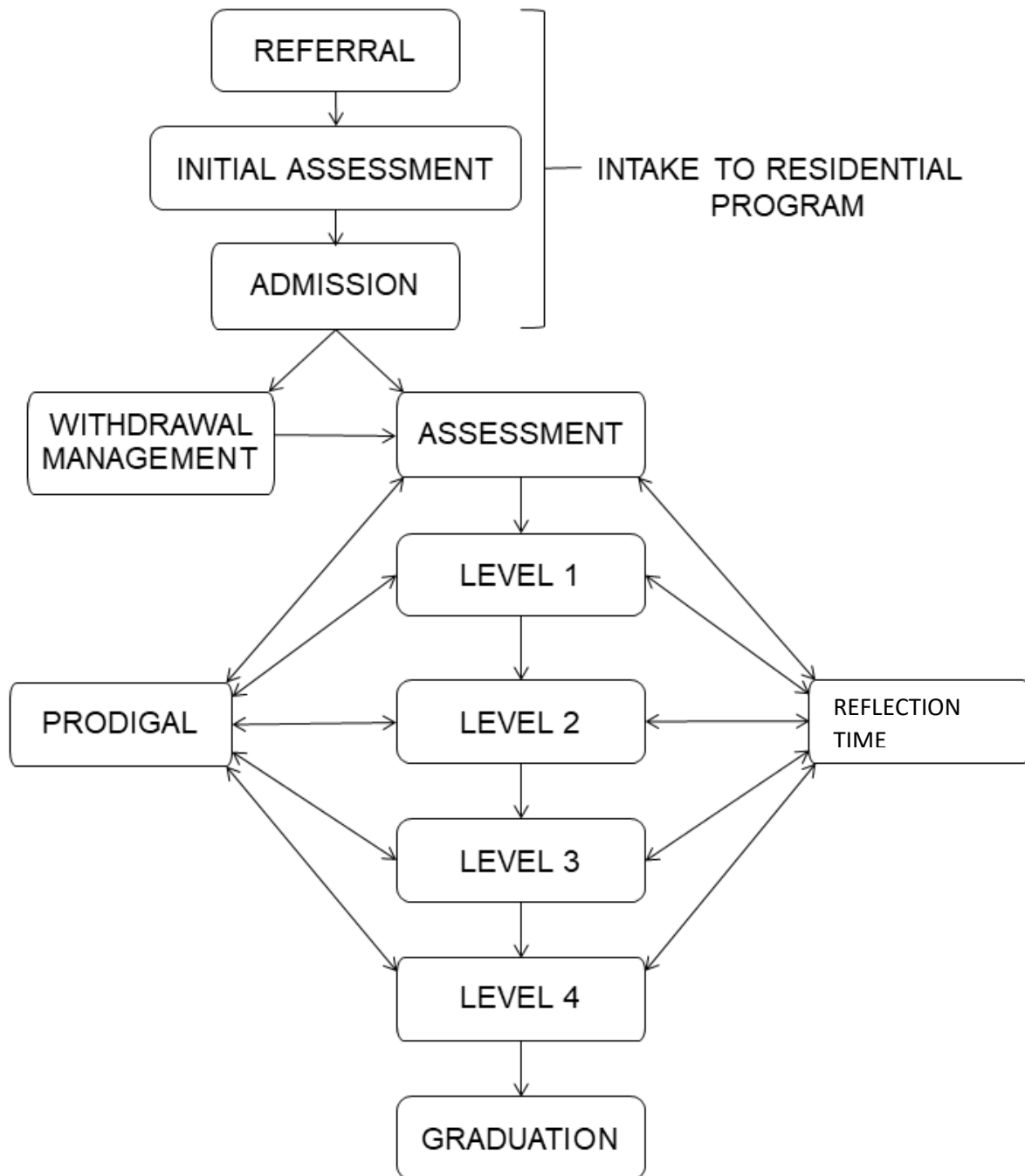


Figure 1. Treatment pathways for clients entering the OH NSW residential program.

1.2.5 TC Treatment Levels

Assessment level. The assessment stage of treatment introduces the client to the basic principles of AoD treatment, and to the various therapeutic strategies used in this area. Clients take part in activities including group therapy, participation in the PLC (e.g., English, maths, computer skills, woodworking, visual arts), psychoeducation sessions about harm minimisation (e.g. HIV/AIDS, hepatitis, other health risks associated with cigarettes and alcohol), and job functions (e.g., housekeeping, grounds maintenance). This level offers clients the opportunity to experience the program and to understand what is required of them, before they commit to the full intervention. All clients participating in the current Evaluation completed the Assessment level at OH NSW.

The TC treatment levels. After participating in the Assessment level, clients wishing to enter the full TC program complete a Treatment Planning Group, a structured treatment review in which the resident outlines their commitment to addressing their problematic AoD use in collaboration with others in the OH NSW TC. The core concept behind the Treatment Planning Group is for the resident to take ownership of their transition from contemplating the consequences of their problematic AoD use, to actively engaging in their own recovery journey. On successfully passing the Treatment Planning Group, the resident will be assisted in developing an initial personal Treatment Plan for Level's I and II of the program. The resident will then work towards progressing through the four levels of the OH NSW TC by demonstrating the changes they are putting in place regarding their new coping strategies and personal insight into the changes they have made thus far. These will remain the mainstay of their progress throughout the rest of the program. Each level of the program has an objective to meet. Once the resident has met this objective and completed certain parts of their Treatment Plan, they will be allowed to progress through to the next level.

The focus of Level 1 is on building the resident's communication skills to resolve conflict and their ability to work alongside others in the TC. The latter skill is targeted in Level 2 as well, however resident also take on more responsibility in the running of the TC, and consequently this improves their organisational and management skills. Finally, in Level 3, the resident's treatment objective is to learn how to display a responsible approach towards others. This will involve a more mature and selfless approach by the resident towards relationship development with members of their family or other residents of the program.

The activities that residents engage in during each of the treatment levels correspond to those in the Assessment level but become more personalised to the client's specific needs.

Examples include remedial English in Assessment level, vocational evaluations and training (Level 1 onwards), remedial education with the PLC (Level 1 onwards), managerial responsibilities (Level 2 onwards) and one-on-one therapy (Level 3 and 4).

Reflection Time and Prodigal. A unique feature of the OH NSW TC structure is the inclusion of the transitory levels "Reflection Time" and "Prodigal" (Figure 1). Clients are placed in Reflection Time when their commitment to their recovery from problematic AoD use, and to the TC as a whole, is in question (as determined by the clinical team). The roles and responsibilities of the client are temporarily paused while they are in Reflection Time, and the individual is provided time to reflect on their treatment and time within the OH NSW residential program. To exit Reflection Time, clients must re-affirm their commitment to the OH NSW by a structured treatment review similar to the original Treatment Planning Group. The Prodigal level is for residents who have either been discharged for a breach of the rules and not asked to leave or a resident (who was in a structure level of the program) who has previously left the program and returned (Prodigal Son returns). The aim of the Prodigal level is to help orient clients to the TC structure as soon as possible and allow them the opportunity

to address why they left the program previously or why they were discharged from the residential program.

Level 4, Graduation and Aftercare. Level 4 is another transitory treatment level in which the client is prepared for life outside of the TC. Level 4 clients primarily act in supervisory roles and serve as role models to clients in the lower levels of the TC. By the time of the client's graduation, the individual is living, or about to live, outside of the TC. They are actively working towards re-establishing their social network outside of the TC and engaging in employment or study-related activities.

1.3 Evaluation Aims

The present research was the first independent outcomes evaluation of the OH NSW residential program. Assessing the treatment outcomes of clients who participate in residential rehabilitation at OH NSW was the primary aim. The secondary aim was to identify which client- or program-related factors are associated with successful recovery.

Primary Research Questions

1. Does participation in the residential program decrease substance use and improve the mental health and physical well-being of clients?
2. Are these treatment gains maintained 3, 6 and 12 months following the client's separation from the program?
3. Which client-related factors predict early separation from the program?

Secondary Research Questions

1. Does participation in the program lead to positive changes in the employment status of clients following their exit from the program?
2. Are improvements in social functioning related to treatment gains following the client's exit from the program?
3. What program-related factors do residential clients perceive to be the most helpful, and the least helpful, to their recovery and do these perceptions change over time? (Qualitative data)

2. METHOD

2.1 Design

A non-randomised, single arm longitudinal design was used to address the two primary research questions and the first two secondary research questions. Baseline data were collected at program intake. Treatment outcomes were again collected at program exit, and then 3, 6 and 12 months after the client's exit from the program. No control group was included as the target intervention of the Evaluation was the residential program itself. A high rate of attrition was confirmed by the pattern of retention for each of the follow up time-points (see Figure 2). The statistical strategies employed to account for missing data are outlined in the Data analysis section. The remaining two secondary research questions were addressed by following a retrospective design based on the client's progression through the OH NSW program. Comparing the baseline and outcome data of treatment completers versus non-completers is an approach commonly employed in residential AoD treatment research (e.g., Darke, Campbell, & Popple, 2012). Participants were grouped according to the last treatment level the client had completed before program exit, and days in treatment indexed the client's length of stay with OH NSW.

2.2 Participants

Participants were 117 clients (78 males) receiving residential AoD treatment from OH NSW.

Clients were recruited from both OH NSW residential sites in the South Western Sydney region. Inclusion criteria were that the client was over 18 years of age and could read and write in English. Clients eligible to skip one or more levels of treatment based on previous stays with the residential program were excluded during recruitment. This exclusion criterion ensured the baseline treatment outcomes of the 117 participants were collected when each client entered the Assessment level of treatment.

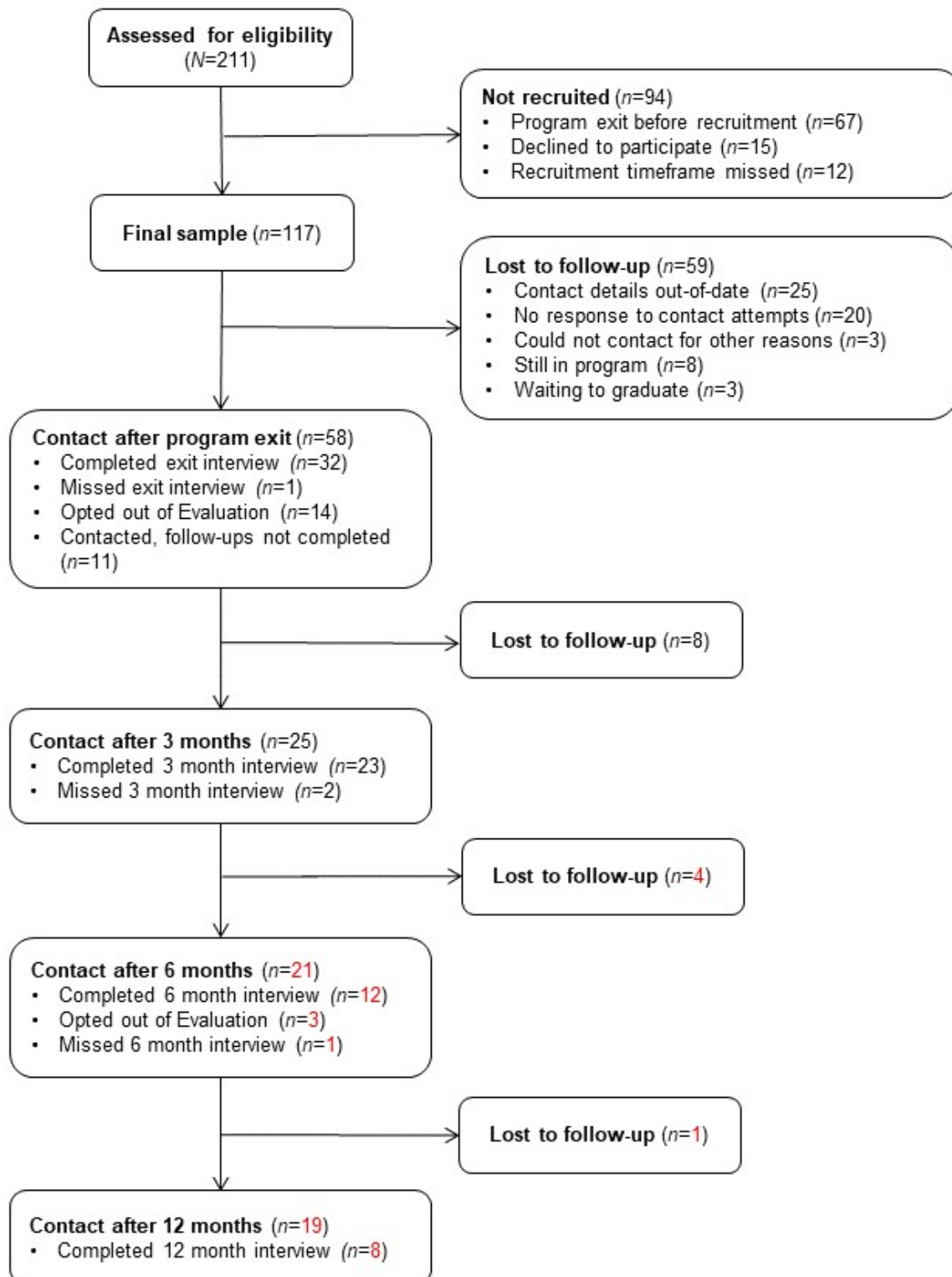


Figure 2. Profile of recruitment and retention for the longitudinal component of the outcomes Evaluation.

Participants were recruited over 12 months, from July 2017 to July 2018. There were 519 unique admissions¹ to the residential program during this period. Two hundred and eleven clients were assessed for eligibility, and approximately 55% were recruited ($N=117$; Figure 2). Several clients left the program before recruitment could take place (31.8%). Other reasons for non-recruitment included the client declining to participate (7.1%) or missing the recruitment time frame (5.7%).

Clients were invited to participate in the Evaluation within 6 weeks of entering residential treatment². Of the 117 participants, 18 clients (15.4%) completed the Level 2 stage. The average length of treatment for the Evaluation sample was 167 days (median = 113, range=12-774 days, Table 1). The most common reason for leaving treatment was the client separating from the program against staff advice (47.0%; Table 1). Other separation reasons included violating the rules of the TC (13.7%), a transfer to another treatment facility (12.4%), or the client leaving the program without informing staff (9.4%). All follow-up interviews after program exit were conducted by two independent research psychologists over a two-year period, from November 1st 2017 to November 1st 2019³. Both researchers were familiar with the workings of the OH NSW program and the client population.

Approximately 40% of participants were lost to follow up after separating from the residential program, primarily due to out-of-date contact details (Figure 2). Of the 58 participants contacted, 32 completed separation interviews (27.4%), 15 declined to participate further (12.8%), and 11 did not complete any follow-up interviews (9.4%). Of the 33 participants

¹ Includes withdrawal-only clients, but not re-entry clients. Sourced from the OH NSW data management team.

² A subset of 33 participants were recruited an average of 8 weeks after program intake, however the outcome data for the primary research questions were collected from these individuals in a similar timeframe to the other 84 participants.

³ Twelve-month follow ups for 5 participants are ongoing as these individuals separated from OH NSW after the 1/01/2019. The exit, 3-month and 6-month outcome data of these participants are included in the Results section of this report where available.

who completed one or more follow-up interviews, one missed their separation interview.

Further details on participant retention are shown in Figure 2.

Table 1. *Days in treatment and reason for separation for 117 Evaluation participants. Separate values for men and women are provided (n (%)).*

	Total (N=117)	Male (n=78)	Female (n=39)
Days in treatment (days), mean (SD)	166.9 (142.8)	153.6 (133.8)	191.3 (157.0)
Reason for separation, n (%)			
Left against advice	55 (47.0)	32 (41.0)	23 (59.0)
Asked to leave	16 (13.7)	12 (15.4)	4 (10.3)
Transferred	13 (12.4)	8 (10.3)	5 (12.8)
Left without notice	11 (9.4)	7 (9.0)	4 (10.3)
Discharged	3 (2.6)	4 (3.4)	0 (0.0)
Completed (Level 3)	2 (1.7)	2 (2.6)	0 (0.0)
Completed (Level 4)	10 (1.7)	7 (9.0)	3 (7.7)
Imprisoned	1 (0.9)	1 (1.3)	0 (0.0)
Still in program (1/11/2019)	5 (4.3)	5 (6.4)	0 (0.0)

2.2.1 The Evaluation sample

Further details on the client characteristics, treatment and drug use of the Evaluation sample are reported in the Results section. The average age of the 117 participants at recruitment was 33 years old (range=18-63 years, Table 2). Most often the clients were referred to residential rehabilitation of their own accord (33.3%), by friends and family (16.2%), or via the criminal justice system (e.g., gaol, court diversion; 12.8%). Other referral sources included non-residential treatment for AoD or related issues (9%) and Family and Community services (8%; see Table 2 for more details). The substance class most often reported as a source of primary concern was amphetamine-type stimulants (ATS; 55.6%), followed by alcohol (23.1%), opioids (incl. heroin; 12.0%), cannabis (6.8%), and then cocaine (2.6%, also see Table 2). Thirteen participants (12.0%) had previously attended residential treatment at OH NSW. During their current stay approximately 60% of the participants completed the withdrawal component of the program prior to residential treatment (Table 2).

Table 2. *Age and referral source details for 117 Evaluation participants. Separate values for men and women are provided (n (%)).*

	Total (N=117)	Male (n=78)	Female (n=39)
Age at intake (yrs), mean (SD)	33 (9)	32 (9)	33 (9)
Referral source, n (%)			
Self	39 (33.3)	28 (35.9)	11 (28.2)
Family member/friend	19 (16.2)	16 (20.5)	3 (7.7)
Other criminal justice setting	15 (12.8)	14 (17.9)	1 (2.6)
Non-residential treatment	11 (9.4)	3 (3.8)	8 (20.5)
Family and Community Services	9 (7.7)	2 (2.6)	7 (17.9)
Legal referral	7 (6.0)	5 (6.4)	2 (5.1)
Medical referral	6 (5.1)	5 (6.4)	1 (2.6)
Internet/Online	3 (2.6)	1 (1.3)	2 (5.1)
Hospital	3 (2.6)	1 (1.3)	2 (5.1)
Other residential treatment	3 (2.6)	1 (1.3)	2 (5.1)
Other not-for-profit	2 (1.7)	2 (2.6)	0 (0.0)
Primary substance of concern, n (%)			
ATSSs	65 (55.6)	42 (53.9)	23 (59.0)
Alcohol	27 (23.1)	18 (23.1)	9 (23.1)
Opioids (incl. heroin)	14 (12.0)	10 (12.8)	4 (10.3)
Cannabinoids (incl. cannabis, hash, pot)	8 (6.9)	5 (6.4)	3 (7.7)
Cocaine	3 (2.6)	3 (3.8)	0 (0.0)
Withdrawal prior to treatment, n (%)			
Yes	72 (61.5)	44 (56.4)	28 (71.8)
No	45 (38.5)	34 (43.6)	11 (28.2)

2.3 Outcome measures

Four measures recommended by the Network of Alcohol and other Drugs Agencies (NADA; Deady, 2009) were used to assess treatment outcomes for substance use, substance dependence, psychological distress and quality of life. Outcomes for social function were measured using the relevant subscale of the Opiate Treatment Index (OTI-SF; Darke, Ward, Hall, Heather, & Wodak, 1991). Demographic information on the primary source of financial income, usual accommodation, current living situation and criminal history were collected to indicate the socioeconomic (SES) outcomes of participants. Attrition rates were included as outcome variables to assist with identifying patterns of early separation as well as retention from the residential program. Participants also provided qualitative feedback on their experiences with the OH NSW program during the exit, 3-month, 6-month and 12-month

interviews to identify which client- or program-related factors were associated with early separation and the best clinical outcomes. Participants also rated their social identity related to their AoD use, recovery journey and relationship to the TC of OH NSW during the four follow-up interviews.

2.3.1 Substance use and dependence

Substance use and substance dependence were assessed with the Timeline Followback Method (TLFB; Sobell & Sobell, 1995) and the Severity of Dependence Scale (SDS; Gossop et al., 1995), respectively. The TLFB allows an individual to estimate the frequency and amount of their substance use retrospectively. In the present Evaluation, the TLFB measured the frequency of use for alcohol, cigarettes, and several other licit and illicit substances over the last four weeks (Table 3). Comparisons between the TLFB and biological measures of cannabis, cocaine, opiates or composite drug use suggest the method has good convergent validity for individuals with substance use disorder (Hjorthøj, Hjorthøj, & Nordentoft, 2012).

The SDS assesses psychological dependence on alcohol or drugs over the last three months. The self-report questionnaire consists of five items, rated on a four-point scale from 0 to 3, with higher scores indicating greater dependence on the primary substance. Good reliability ($\alpha = .80-.90$) and moderate criterion validity have been reported for the SDS in an Australian population (Gossop et al., 1995).

2.3.2 Psychological distress

Psychological distress was assessed with a modified version of the Kessler 10 Psychological Distress Scale (K10; Kessler et al., 2002a). The K10 was developed as a screening tool to identify individuals at risk of mental health issues (Table 3; Kessler et al., 2002a) and consists

of 10 items rated on a five-point scale ranging from 0 ('never') to 5 ('all the time'). A total score is obtained by summing all items, with scores ranging between 10 and 50. Total scores can be categorised into risk of significant mental health ranges, with 0 to 15 indicating Low Risk, 16-21 indicating Medium Risk, 22 to 29 indicating High Risk and 30 or above indicating Very High Risk (Oakley et al., 2010). The version of this questionnaire used for the present evaluation was the K10+LM, which includes the 10 distress items and four additional questions about the individual's daily functioning over the last four weeks (Department of Health and Aging, 2003).

2.3.3 Quality of life

The 8-item European Health Interview Survey Quality of Life index (EUROHIS-QoL8; Schmidt, Mühlan, & Power, 2006) was used to measure overall quality of life in physical, psychological, social and living domains, over the last two weeks. The eight self-report items are scored on a five-point scale ranging from 1 to 5. An overall score was calculated by summing all responses, with higher scores indicating greater quality of life.

2.3.4 Social functioning

The Opiate Treatment Index (Darke, Hall, Wodak, Heather, & Ward, 1992; Darke et al., 1991) is a widely used self-report measure that was developed to assess the treatment of individuals who use opioids (Table 3). The OTI-SF subscale measures social adjustment, social support, and the respondent's association with other individuals who use drugs (Darke et al., 1992). For the present evaluation, one OTI-SF item was modified to ensure the question was relevant for participants who did not use heroin.

Table 3. *Outcome measures used in the OH NSW Evaluation.*

Outcome measure	Details	Scoring	Validation
Modified TLFB (Sobell & Sobell, 1995)	Assessed days of use over last four weeks (28 days) for alcohol, tobacco (e.g., cigarettes), heroin, ATSS, other opioids, cocaine, tranquillizers, cannabis, and any other nominated licit or illicit substances.	Score = estimated days of use Alcohol = includes no. of standard drinks/day, no. days of heavy use and no. of standard drinks consumed on heavy use days. Tobacco = includes no. of cigarettes per day of use.	<ul style="list-style-type: none"> Originally developed for alcohol use (Sobell & Sobell, 2008). Validity and reliability shown to generalise to other licit and illicit substance classes.
SDS (Gossop et al., 1995)	A generalised measure of the psychological effects of drug dependence. The version employed in the Evaluation referred to feelings of dependence over the prior three months.	5 items scored from 0-3 and summed. Total scores range from 0-15. Cut-off ranges: alcohol (≥ 3), cannabis (≥ 3), cocaine (≥ 3), amphetamines (≥ 3), opioids (≥ 5), benzodiazepines (≥ 5)	<ul style="list-style-type: none"> Moderate to good validity and reliability depending on the substance class (Deady, 2009) Cut off ranges for dependence varies according to substance class, age, sex and culture.
K10+LM (Kessler et al., 2002a)	The K10 is a versatile and straightforward measure of psychological distress. The K10+LM uses a time period of the last 4 weeks and includes 4 additional questions related to a person's daily functioning (no. days unable, no. days cut down, visits to health professionals, and how often physical problems have been the source of distress).	10 items scored from 1-5 and summed, + four additional items related to physical health. Total scores range from 10-50. Higher scores=higher distress Risk ranges: low (10-15), moderate (16-21), high (22-29), Very high (30-50)	<ul style="list-style-type: none"> The K10 demonstrates good reliability and validity (Kessler et al., 2002a). Can be used across a wide range of samples (Deady, 2009) However, K10 scores may not be equivalent across different cultural contexts (Stolk, Kaplan, & Szwarc, 2014).
EUROHIS-QoL8 (Schmidt et al., 2006)	A concise measure of quality of life with items taken from longer and widely-tested questionnaires measuring the same construct.	8 items scored from 1-5 and summed. Total scores range from 8-40. Higher scores=higher quality of life	<ul style="list-style-type: none"> Demonstrates acceptable reliability and validity across multiple cultural contexts (da Rocha, Power, Bushnell, & Fleck, 2012). Best used as a unidimensional measure of quality of life (da Rocha, Power, Bushnell, & Fleck, 2012)
Modified OTI-SF (Darke, Hall, Wodak, Heather, & Ward, 1992; Darke et al., 1991)	The OTI-SF is a subscale taken from the longer Opiate Treatment Index. The full self-report measure is used to collect demographic information and assess 6 types of treatment outcomes: drug use, HIV risk-taking, social functioning, criminality and psychological adjustment.	13 items scored from 0 to 4 and summed. Total scores range from 0-52. Items 2, 4, 5, 6, 7, 10, 11a and 11b are reverse scored. Items 4, 5, 8: NA = 0; items 6, 8, 9, 10: NA = 4 Higher scores = lower levels of social functioning	<ul style="list-style-type: none"> The Opiate Treatment Index is shown to have acceptable reliability and validity for individuals who use opioids (Adelekan et al., 1996) . The OTI-SF has been used to index social functioning in individuals with polysubstance use issues (Staiger, Lake, & Long, 2011).

2.4 Procedure

Ethics approval for the Evaluation was granted by the University of Technology Sydney (UTS) Human Research Ethics Committee, Australia (ETH17-1524). Baseline demographics and outcome data were collected on-site at OH NSW. Outcome data for the program exit, 3-month, 6-month and 12-month follow-ups were collected through phone interviews, or via a secure online REDcap survey (Harris et al., 2019). The online survey was a self-report version of the questionnaires used for the phone follow-up interviews. Due to the intensive nature of the residential program care was taken to ensure recruitment and internal data collection were conducted with minimal impact on the client's treatment journey and in lines with the Australian NHMRC guidelines (National Statement on Ethical Conduct in Human Research, 2007) Recruitment was performed by the in-house clinical team in collaboration with the UTS researchers. The OH NSW clinical team consists of four to five psychologists who administer mental health assessments and deliver therapeutic support to residential clients. From July 2017 to July 2018 a UTS researcher worked on-site at the Eagle Vale or the Ingleburn residential location to provide support with recruitment to staff and clients. This approach was followed in order to minimise any sense of coercion and to ensure clients were able to provide informed consent.

Clients were approached for recruitment within 6 weeks of beginning residential treatment. A subset of 33 clients were recruited an average of 8 weeks after program intake, however the baseline outcome data for the primary research questions was collected from these individuals in a similar timeframe to the other 84 participants, apart from the OTI-SF. Average OTI-SF scores were similar between the 33 clients ($M= 24.1$, $SD=8.0$) and the remaining 84 participants ($M= 22.5$, $SD=7.6$; Mann-Whitney U-Test, $U = 1425$, $p = .62$). Participating clients provided additional contact details, their education history, and

completed a self-report version of the OTI-SF while supervised by a member of the clinical team ($M=31$ days, range= 7-165 days). Following this, the client's baseline demographics and data for the SES, TLFB, SDS, K10+LM and EUROHIS-QoL8 outcomes were retrieved by the on-site UTS researcher from the Client Outcomes Management System in the OH NSW client database (NADA, 2012). The participant's progression through the program was monitored by the UTS researcher on a weekly basis until the client separated. Data for the SES, TLFB, SDS, K10+LM, EUROHIS-QoL8 and OTI-SF were collected during the program exit, 3-month, 6-month and 12-month follow-ups. Qualitative feedback on the residential program and the participant's SISI ratings were also collected during the interviews and surveys. The 3-month, 6-month and 12-month interviews were scheduled according to the original separation date of the client from the residential program.

2.4.1 Data analysis

Analyses were performed with SPSS 25 and jamovi (The jamovi project, 2019). The jamovi module GALMj was used to apply mixed effects (ME) and generalised linear (GL) modelling to quantitative follow-up data (Gallucci, 2019). Qualitative feedback from the follow up interviews were examined using NVivo 12 software. Throughout all analyses the level of significance was set at 5% ($\alpha=.05$). All values are reported to 1 decimal place excluding counts, which are reported to the nearest whole number. Analyses are reported to 2 or more decimal places as needed.

Client characteristics. Descriptive statistics were computed for participant sex, age, country of birth, education level (secondary, tertiary), mental health treatment history and drug use (e.g., primary drug of concern, use in last 12 months, injection history). Pearson chi-square (χ^2) tests of association were employed to test whether there were relationships between

participant sex and client characteristics. Fisher's exact test was used in instances where any expected cell counts were less than 1 (Campbell, 2007). Descriptive statistics were also calculated for program retention and treatment level completion. Days in treatment were computed from entry into the Assessment level and were analysed to check whether these varied as a function of participant sex (Mann-Whitney U-test). Participant age was correlated with days in treatment using Kendall's tau coefficient. Client characteristics and program retention variables were calculated separately for the Follow-up sample and compared with participants not followed up using χ^2 tests and Mann-Whitney U-tests.

Treatment outcomes. A challenge often faced by studies with AoD client samples is that incomplete data and high attrition can lead to the violation of assumptions necessary for many statistical techniques. In the present report, the analysis techniques that would best represent the pattern of outcomes observed were selected. Similar to data for the client characteristics, baseline outcome data were analysed with χ^2 tests and Mann-Whitney U-tests. Follow-up outcome data for the SDS, the EUROHIS-QoL8, the OTI-SF and two of the SISI ratings were analysed with linear ME modelling. Linear ME modelling is appropriate for data sets with large amounts of missing data (e.g., Krueger & Tian, 2004), and allows for random variation due to individual participants to be modelled in the analyses. Data for the 10 K10+LM distress items and the AoD item for the SISI measure were positively skewed, therefore these data were analysed using generalised ME models estimated with Poisson distributions. Outcomes for the TLFB and the additional questions of the K10+LM consisted of count data and were also positively skewed. These data were analysed with GL models with a negative binomial distribution, to again allow for the positive skewing of the count data.

A 5 way (Time: entry, exit, 3-month, 6-month, 12-month) repeated measures design was followed for the linear ME, generalised ME and GL models. In each ME model Participant was included as a random intercept. Degrees of freedom were estimated with Satterthwaite approximations in the linear ME models. For ME models, the F -statistic for the fixed Time main effect is reported. Pairwise comparisons with Holm-Bonferroni corrections applied were used for post-hoc analysis if the main effect of Time reached statistical significance. For GL models, the loglikelihood ratio test for the Time main effect is reported. For post-hoc analysis parameter estimates with repeated coding applied was used to indicate if counts increased, remained stable or decreased across the exit, 3-month, 6-month and 12-month time points. Despite the use of GL models, TLFB outcomes for heroin, other opioids, cocaine and tranquilisers were not analysable due to too few follow-up participants reporting use of these substances. Instead, descriptive statistics for these four categories of TLFB use are reported. Only participants in the Follow-up sample are included in the relevant analyses.

3. RESULTS

3.1 Section 1 – Outcomes from the Program - The Evaluation Project

Section 1 includes further details on the baseline characteristics of the Evaluation sample, including comparisons between the full sample (n=117) and the subset of participants who completed one or more follow-up interviews (n=33). Section 2 consists of the outcome data for the primary research questions, including analyses for the TLFB, SDS, K10+LM and EUROHIS-QoL8. Results for the secondary research questions are described in Section 3, including analyses for the SES variables (i.e., employment status, living situation of clients), the OTI-SF, the SISI measure, and the participant's feedback on the residential program. Section 3 also includes exploratory analyses for comparison of demographic information and outcome data for program completers versus non-completers.

3.1.1 Baseline Characteristics of the Evaluation Sample

The preferred language of all participants was English. Most participants named Australia as their country of birth, and the parents of most participants were Australian-born (Table 4). If born overseas, participants and their parents were most likely originated from Europe, the Middle East or Africa. Over 70% of the Evaluation sample had finished high school, with 30% completing their senior high school studies (Table 5). More than 50% had received tertiary education at the technical (39%) or university (10%) level. Proportionally more men than women in the sample had completed high school, senior high school or tertiary education (Table 5).

Table 4. *Geographical regions for participant's country of birth, as well as that of the participant's mother and father (n (%)).*

Country of birth, n (%)	Participant	Mother	Father
Australia	100 (85.5)	85 (72.6)	87 (74.4)
Europe	6 (5.1)	15 (12.8)	13 (11.1)
New Zealand/Oceania	4 (3.4)	5 (4.3)	7 (6.0)
Middle East	3 (2.6)	8 (6.8)	9 (7.7)
Africa	3 (2.6)	1 (0.9)	1 (0.9)
America	1 (0.9)	1 (0.9)	0 (0.0)
Asia	0 (0.0)	2 (1.7)	0 (0.0)

Table 5. *Education, treatment details, and mental health status prior to program entry for the Evaluation sample. Separate values for men and women are provided.*

	Total (N=117)	Male (n=78)	Female (n=39)	Test statistic	p-value
School education, n (%)					
Primary school	1 (0.9)	1 (1.3)	0 (0.0)	NA	NA
High school before Year 10	30 (25.6)	14 (17.9)	16 (41.0)	$\chi^2(2)=7.13^b$	.03*
Completed High School ^a	50 (42.7)	36 (46.2)	14 (35.9)	-	-
Completed Senior High School	36 (30.8)	27 (34.6)	9 (23.1)	-	-
Tertiary education, n (%)					
None	58 (49.6)	32 (41.0)	26 (66.7)	$\chi^2(2)=7.17$	.03*
TAFE/Certificate/Trade	46 (39.3)	35 (44.9)	11 (28.2)	-	-
University level	13 (11.1)	11 (14.1)	2 (5.1)	-	-
Withdrawal management, n (%)	72 (61.5)	44 (56.4)	28 (71.8)	$\chi^2(1)=2.6$	.11
Level completed, n (%)					
None	16 (13.7)	10 (12.8)	6 (15.4)	-	-
Assessment	101 (86.3)	68 (87.3)	33 (84.6)	$\chi^2(1)=0.15$	.70
Level 1	66 (56.4)	41 (52.6)	25 (64.1)	$\chi^2(1)=1.41$	.24
Level 2	32 (27.4)	21 (26.9)	11 (28.2)	$\chi^2(1)=0.02$	.88
Level 3	16 (13.7)	13 (16.7)	3 (7.7)	FET=2.20	.36
Level 4/Graduation	3 (2.6)	1 (1.3)	2 (5.1)	NA	NA
Re-entry during treatment, n (%)	8 (6.8)	6 (7.7)	2 (5.1)	$\chi^2(1)=0.27$	.60
Days in treatment, mean (SD)	163.56 (139.23)	148.26 (127.05)	191.32 (156.97)	$U = 1070$	.12
Received a diagnosis? n (%)	61 (52.1)	35 (44.9)	26 (66.7)	$\chi^2(1)=4.95$	.03*
Diagnoses, n (%)					
Depression	41 (35.0)	27 (34.6)	14 (35.9)	$\chi^2(1)=0.02$	1
Anxiety	25 (21.4)	17 (21.8)	8 (20.5)	$\chi^2(1)=0.03$	1
Bipolar disorder	9 (7.7)	2 (2.6)	7 (17.9)	$\chi^2(1)=8.67$	.006**
Schizophrenia	4 (3.4)	3 (3.8)	1 (2.6)	$\chi^2(1)=0.13$	1
Post-traumatic stress disorder	5 (4.3)	2 (2.6)	3 (7.7)	Fisher's exact	.44
Other mental health condition ^c	10 (8.5)	7 (9.0)	3 (7.7)	NA	-
No. of diagnoses, no. (%)					
None	60 (51.3)	44 (56.4)	16 (41.0)	$\chi^2(3)=3.42$	.33
One	28 (23.9)	15 (19.2)	13 (33.3)	-	-

Two	21 (17.9)	14 (17.9)	7 (17.9)	-	-
Three or more	8 (6.9)	5 (6.4)	3 (7.7)	-	-

Note. $p < .05 = *$, $p < .01 = **$, $p < .001 = ***$

^aCompleted High School = School Certificate (now known as the Record of Achievement; Education Standards Authority NSW, n.d.) or equivalent; Completed Senior High School = Higher School Certificate or equivalent.

^bAnalysis was performed with 116 participants as in each instance one category contained one participant.

^cOther mental health conditions included borderline personality disorder, schizoaffective disorder, psychosis and attention deficit hyperactivity disorder.

3.1.2 Treatment details

During their current stay approximately 60% of the participants completed the withdrawal component of the program prior to residential treatment (Table 5). More than 85% of the Evaluation sample completed the Assessment level. More than half 50% went on to complete Level 1, however less than 30% completed Level 2. Less than 15% completed Level 3, and less than 5% went on to complete Level 4 and graduate from the residential program.

Approximately 7% left and re-entered residential treatment at OH NSW during the time period of the Evaluation (Table 5). Women tended to stay in treatment for a longer period of time than men in the sample, however this difference was not statistically significant. Eighty-two participants (70.1%) reported that they had engaged with a mental health professional at least once before entering residential rehabilitation. Approximately 50% of the sample had been diagnosed with at least one mental health condition prior to Assessment (Table 5).

Proportionally more women than men had a pre-existing mental health diagnosis. This result may have been driven by proportionally more women than men in the Evaluation sample being diagnosed with bipolar disorder before TC intake. Overall, depression was the most common pre-existing diagnosis, followed by anxiety, bipolar disorder, schizophrenia and post-traumatic stress disorder. Of the 57 participants with a pre-existing diagnosis, 29 had received two or more diagnoses prior to entering the residential program (50.9%).

3.1.3 Baseline substance use

The proportion of different primary substance classes nominated by men and women in the Evaluation sample were similar (Chi-squared test of independence, $\chi^2(4)=1.83, p=.77$). Sixty-three of 65 participants (96.9%) who nominated amphetamines specified methamphetamines (e.g., speed, ice, crystal meth) as their primary substance of concern. Heroin was the most common opioid specified by participants who nominated opioids as a primary concern ($n=11, 78.6\%$). Most of the sample reported at least one secondary substance of concern (69.2%; Table 6). The most common secondary substance class was nicotine ($n=44, 37.6\%$), followed by cannabis ($n=32, 27.4\%$), ATSS ($n=17, 14.5\%$), opioids ($n=10, 8.5\%$) and then alcohol ($n=9, 7.7\%$). Half of the Evaluation sample had never injected drugs before (54.7%), however just over 25% of participants had injected drugs in the 3 months prior to TC intake (Table 6). Eleven clients reported experiencing an overdose within the previous 3 months (9.4%).

Approximately 55% of the sample had used alcohol in the last 12 months (Table 7). Most had also used more than one type of drug in the 12 months prior to program intake (excludes tobacco and alcohol, $n=74, 63.2\%$). Proportionally more women than men only used one drug type in the last 12 months, while proportionally more men than women used three or more drug types in the same time period (Table 7).

Table 6. No. (%) of secondary substances of concern in the last 3 months, injection history, tobacco use in the last month, alcohol use in the last 12 months, and no. of substances used in the last 12 months for the Evaluation sample.

	Total (N=117)	Male (n=78)	Female (n=39)	Test statistic	p-value
No. secondary drug classes^a					
None	36 (30.8)	25 (32.1)	11 (28.2)	$\chi^2(3)=5.39$	.15
One	47 (40.2)	26 (33.3)	21 (53.8)	-	-
Two	21 (17.9)	17 (21.8)	4 (10.3)	-	-
Three or more	13 (11.1)	10 (12.8)	3 (7.7)	-	-
Injection history					
In the last 3 months	32 (27.4)	19 (24.4)	13 (33.3)	$\chi^2(3)=3.92$	.27
3 to 12 months ago	12 (10.3)	9 (11.5)	3 (7.7)	-	-
More than 12 months ago	9 (7.7)	4 (5.1)	5 (12.8)	-	-
Never injected	64 (54.7)	46 (59.0)	18 (46.2)		
Used alcohol last 12 months?	65 (55.6)	43 (55.1)	22 (56.4)	$\chi^2(1)=0.02$	.90
No. drug classes last 12 months^b					
None	13 (11.1)	10 (12.8)	3 (7.7)	$\chi^2(4)=13.04$	.01*
One	30 (25.6)	13 (16.7)	17 (43.6)	-	-
Two	41 (35.0)	27 (34.6)	14 (35.9)	-	-
Three	23 (19.7)	20 (25.3)	3 (7.7)	-	-
Four or more	10 (8.5)	8 (10.3)	2 (5.1)		

Note. $p < .05 = *$, $p < .01 = **$, $p < .001 = ***$

^aincludes alcohol

^bexcludes alcohol and tobacco

Apart from tobacco and alcohol, the drug class most often used by participants in the previous 12 months was ATs (Figure 3). The next most used drug type was cannabis, followed by opioids, tranquillisers, cocaine, gamma hydroxybutyrate (GHB; $n=3$, 2.6%), and hallucinogens ($n=2$, 1.7%; also see Figure 3). Table 7 shows the available data for the frequency of use of ATs, cannabis, alcohol, opioids, cocaine, tranquillisers, GHB and hallucinogens. Before program intake, almost 50% of participants reported daily use of ATs in the past 12 months. Approximately 30% disclosed daily use of cannabinoids and alcohol during this same time period, while nearly 13% reported daily opioid use. Over 90% of the Evaluation sample had not used cocaine, tranquillisers, GHB or hallucinogens in the past 12 months.

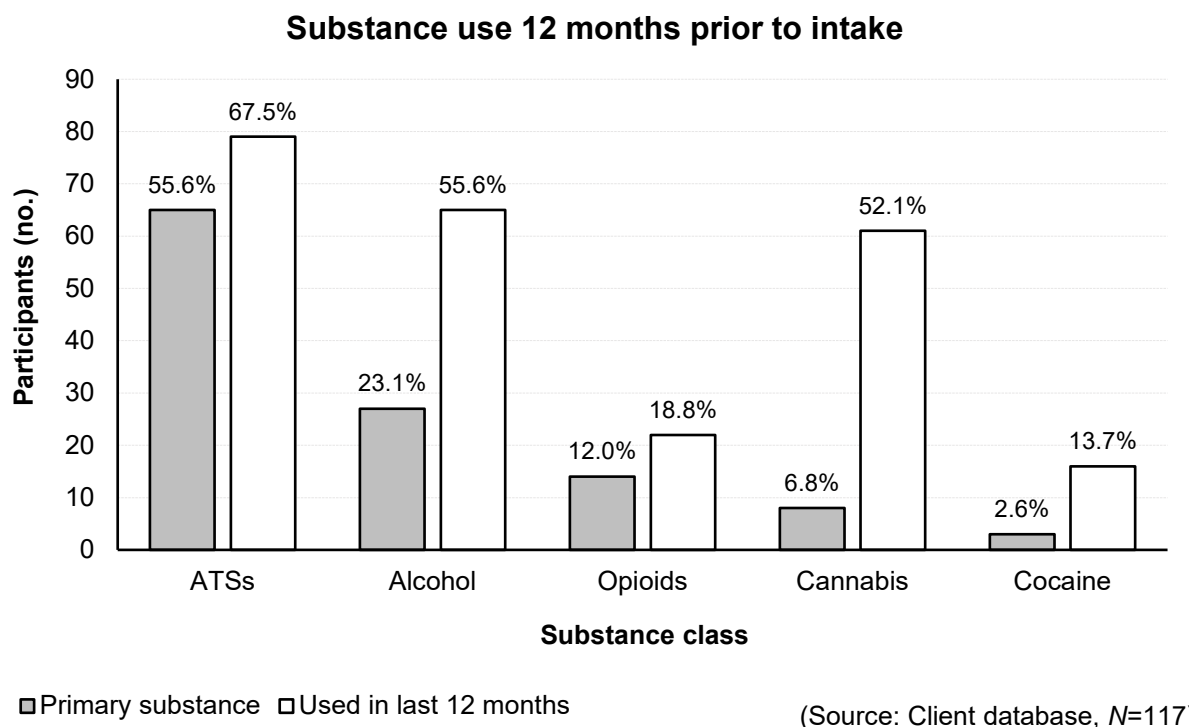


Figure 3. Substance use in the 12 months before program intake for the Evaluation sample. For comparison purposes, values for participants who reported ATSS, alcohol, opioids, cannabis, cocaine and tranquilisers as their primary substance of concern in the last 3 months are also included.

Table 7. Frequency of substance use in the 12 months before TC intake for the Evaluation sample (N=117).

	Daily	More than weekly, but not daily	Weekly	Less often	No use
ATSS	54 (46.2)	7 (6.0)	8 (6.8)	5 (4.3)	43 (36.8)
Cannabis	35 (29.9)	6 (5.1)	3 (2.6)	6 (5.1)	67 (57.3)
Alcohol	32 (27.4)	7 (6.0)	4 (3.4)	2 (1.7)	72 (61.5)
Opioids	15 (12.8)	4 (3.4)	1 (0.9)	4 (3.4)	93 (79.5)
Cocaine	2 (1.7)	3 (2.6)	2 (1.7)	2 (1.7)	108 (92.3)
Tranquillisers	1 (0.9)	1 (0.9)	1 (0.9)	4 (3.4)	110 (94.0)
GHB	2 (1.7)	1 (0.9)	0 (0.0)	0 (0.0)	114 (97.4)
Hallucinogens	0 (0.0)	0 (0.0)	0 (0.0)	2 (1.7)	115 (98.3)

3.1.4 Comparisons between the full sample and the follow-up sample

Thirty-three clients from the Evaluation sample completed one or more follow-up interviews; as shown in Figure 2 the remainder either opted out of the project, were contacted but did not

complete a follow up, or were lost to follow up entirely. The follow-up participants ($M=35.3$, $SD= 12.0$) were on average older than participants who were not followed up ($M=31.4$, $SD= 7.7$), however the difference between the medians was not statistically significant (Mann-Whitney U-Test, $U = 1215$, $p = .38$). A trend was also found for the relationship between withdrawal management and whether the participant was followed up or not (Chi-squared test of independence, $\chi^2(1)=3.31$, $p=.07$). Compared to participants who were followed up ($n=16$; 48.5%), proportionally more of the participants who were not followed up underwent withdrawal management prior to TC entry ($n=56$; 66.7%). The remaining client and drug use characteristics were similar between the Follow-up sample and participants not followed up, bar three instances (Table 8; Table 9).

First, proportionally more of the Follow-up sample had completed their senior high school studies compared to participants who were not followed up (Table 8). Despite this, the frequency of tertiary education attainment was similar between the two groups. Second, all four participants with a pre-existing diagnosis of schizophrenia before TC intake were part of the Follow-up sample. The relationship between follow-up status and no. of drugs used in the previous 12 months did not reach significance.

Table 8. *Client characteristics of the Follow-up sample, including sex, education, country of birth, treatment details and mental health status (n (%)). Values and statistical comparisons with participants not followed up are also provided.*

	Follow-up (n=33)	No follow-up (n=84)	Test statistic	p-value
Sex, no. males (%)	22 (68.8)	56 (65.9)	$\chi^2(1)=0.00$	1
School education, n (%)				
Primary school	0 (0.0)	1 (1.2)	NA	NA
High school before Year 10	3 (9.4)	27 (31.8)	$\chi^2(2)=7.25^a$	.02*
Completed High School	16 (50.0)	34 (40.0)	-	-
Completed Senior High School	13 (40.6)	23 (27.1)	-	-
Tertiary education, n (%)				
None	13 (40.6)	45 (52.9)	$\chi^2(2)=1.26$	.53
TAFE/Certificate/Trade	14 (43.8)	32 (37.6)	-	-
University level	5 (15.6)	8 (9.4)	-	-
Country of birth, n (%)				
Australia	24 (75.0)	76 (89.4)	FET=5.25	.19
New Zealand/Oceania	1 (3.1)	3 (3.5)	-	-
Europe	2 (6.3)	4 (4.7)	-	-
Middle East	2 (6.3)	1 (1.2)	-	-
Africa	2 (6.3)	1 (1.2)	-	-
America	1 (3.1)	0 (0.0)	NA	NA
Re-entry during treatment, n (%)	3 (9.1)	5 (6.0)	$\chi^2(1)=0.37$	.55
Level completed, n (%)				
None	7 (21.2)	9 (10.7)	-	-
Assessment	26 (78.8)	75 (89.3)	$\chi^2(1)=2.21$	.14
Level 1	20 (60.6)	46 (54.8)	$\chi^2(1)=0.33$	.57
Level 2	8 (24.2)	24 (28.6)	$\chi^2(1)=0.22$	.64
Level 3	4 (12.1)	12 (14.3)	FET=0.52	1
Level 4/Graduation	3 (9.1)	0 (0.0)	NA	NA
Days in treatment, mean (SD)	177.0 (168.7)	157.6 (124.7)	$U = 1241$	.89
Ever received a diagnosis? n (%)	24 (75.0)	62 (72.9)	$\chi^2(1)=2.44$	.12
Mental health diagnoses, n (%)				
Depression	14 (56.3)	27 (31.8)	$\chi^2(1)=2.19$	.14
Anxiety	10 (31.3)	15 (17.6)	$\chi^2(1)=2.18$	.14
Bipolar disorder	2 (6.3)	7 (8.2)	$\chi^2(1)=0.17$	.68
Schizophrenia	4 (12.5)	0 (0.0)	Fisher's exact	.006**
Post-traumatic stress disorder	1 (3.1)	4 (4.7)	$\chi^2(1)=0.17$	.68
Other mental health condition*	4 (12.5)	6 (7.1)	NA	-
No. of diagnoses, no. (%)				
None	44 (56.4)	16 (41.0)	$\chi^2(3)=3.63$	.30
One	15 (19.2)	13 (33.3)	-	-
Two	14 (17.9)	7 (17.9)	-	-
Three or more	5 (6.4)	3 (7.7)	-	-

Note. $p < .05 = *$, $p < .01 = **$, $p < .001 = ***$

*Analysis was performed with 116 participants as in each instance one category contained one participant.

However, proportionally more of the follow-up sample did not use any drug type in the prior 12 months compared to participants who were not followed up (21% vs. 7%; Table 9). In addition, a higher larger proportion of participants who were not followed used more than 4 drug types in the previous 12 months compared to the follow-up sample (11% vs. 1%).

Table 9. *Drug use characteristics of the Follow-up sample (n (%)). Values and statistical comparisons with participants not followed up are also provided.*

	Follow-up (n=33)	Not followed-up (n=84)	Test statistic	p-value
Primary drug of concern				
ATSSs	15 (59.5)	50 (45.5)	$\chi^2(4)=3.02$	.56
Alcohol	11 (33.3)	16 (19.0)	-	
Cannabis	2 (6.1)	6 (7.1)	-	
Opioids	4 (12.1)	10 (11.9)	-	
Cocaine	1 (3.0)	2 (2.4)	-	
No. secondary drug classes (includes alcohol)				
None	13 (39.4)	23 (27.4)	$\chi^2(3)=2.33^a$	.51
One	12 (36.4)	35 (41.7)	-	-
Two	6 (18.2)	15 (17.9)	-	-
Three or more	2 (6.1)	11 (13.1)	-	-
Injection history, n (%)				
In the last 3 months	8 (24.2)	24 (28.6)	$\chi^2(3)=3.97$	.27
3 to 12 months ago	1 (3.0)	11 (13.1)	-	-
More than 12 months ago	4 (12.1)	5 (6.0)	-	-
Never injected	20 (60.6)	44 (52.4)		
Used alcohol last 12 months?	22 (66.7)	43 (51.2)	$\chi^2(1)=2.30$	.13
Used in last 12 months?				
ATSSs	19 (57.6)	60 (71.4)	$\chi^2(1)=2.07$	.15
Cannabis	15 (45.5)	46 (54.8)	$\chi^2(1)=0.82$	.36
Opioids	9 (27.3)	26 (31.0)	$\chi^2(1)=0.15$	.70
Cocaine	4 (12.1)	12 (14.3)	$\chi^2(1)=0.09$	.76
Tranquillisers	8 (24.2)	18 (21.4)	$\chi^2(1)=.11$	.74
GHB	0 (0.0)	3 (3.6)	NA	NA
Hallucinogens	0 (0.0)	3 (3.6)	NA	NA
No. drug classes last 12 months (excludes alcohol)				
None	7 (21.2)	6 (7.1)	$\chi^2(4)=7.00$	.14
One	7 (21.2)	23 (27.4)	-	-
Two	10 (30.3)	31 (36.9)	-	-
Three	8 (24.2)	15 (17.9)	-	-
Four or more	1 (0.9)	9 (10.7)		

3.1.5 Primary research questions

Full baseline outcome data was available for the TLFB, the SDS and the K10+LM, however the baseline EUROHIS-QoL8 score for one participant not followed up was missing ($N=116$). Internal consistency was strong for the EUROHIS-QoL8 ($\alpha=.76$) and the 10 distress items of the K10+LM ($\alpha=.87$). These findings are consistent with prior research (da Rocha et al., 2012; Kessler et al., 2002b). Overall, internal consistency for the SDS was acceptable ($\alpha=.67$; Deady, 2009).

3.1.5.1 Substance use

Baseline tobacco use. More than 85% of the Evaluation sample had smoked cigarettes or used other forms of tobacco inhalation in the 28 days prior to TC intake (Table 11). The median number of cigarettes used per day was 10 (range = 3-50 cigarettes), and 85% participants (72.7%) had smoked cigarettes every day of the previous 28 days. A trend was found for the relationship between days of tobacco use and being a part of the Follow-up sample. Individuals in the Follow-up sample were more likely to use tobacco and alcohol in the 28 days preceding TC intake compared to participants not followed up.

Baseline alcohol use. Less than 50% of the Evaluation sample had used alcohol in the 28 days prior to TC intake (Table 10). Approximately 20% reported that their alcohol use had been heavier than usual on at least one day during this time period. Nine participants (7.7%) had drunk alcohol on a daily basis before TC intake, although participants who reported alcohol use typically drank alcohol on six of the 28 days (range=1-28 days). On each of these days, the median number of standard drinks ingested was eight (range=1-62 standard drinks). For 43 clients (36.8%), their estimated number of standard drinks was above the NHMRC guidelines of less than four standard drinks per day to reduce the risk of alcohol-related injury

on a single occasion (NHMRC, 2009). The relationship between days of alcohol use and being part of the Follow-up sample was statistically significant.

Table 10. *Baseline data for the TLFB, categorised by substance type (n (%)). Medians (range) are shown for days of use, number of cigarettes used and number of standard drinks consumed.*

	Total (N=117)	Follow-up (n=33)	No follow-up (n=84)	Test statistic	p-value
Tobacco/cigarette use					
Used last 28 days? n (%)	101 (86.3)	28 (84.8)	73 (72.3)	$\chi^2(1)=0.09$	.77
No. days of use	28.0 (1-28)	28.0 (5-28)	28.0 (1-28)	$U = 1180$	.05
Cigarettes per day	10.0 (3-50)	14.0 (4-50)	10.0 (3-40)	$U = 1186$	.21
Alcohol use					
Used last 28 days? n (%)	54 (46.2)	19 (57.6)	35 (41.7)	$\chi^2(1)= 2.41$	.12
No. days of use	6.0 (1-28)	15.0 (1-28)	4.0 (1-28)	$U = 449$	.03*
Standard drinks per day	5.0 (1-62)	6.0 (1-62)	5.0 (1-35)	$U = 391$	.29
Standard drinks/day, n (%)					
No alcohol	63 (53.8)	14 (42.4)	49 (58.3)	$\chi^2(4)=4.94$	.29
1-4 standard drinks	11 (9.4)	2 (6.1)	9 (10.7)	-	-
5-10 standard drinks	23 (19.7)	8 (24.2)	15 (17.9)	-	-
11-20 standard drinks	11 (9.4)	5 (15.2)	6 (7.1)	-	-
21 or more standard drinks	9 (7.7)	4 (12.1)	5 (6.0)	-	-
Heavy alcohol use					
Heavy use last 28 days? n (%)	22 (18.8)	8 (24.2)	14 (16.7)	$\chi^2(1)=0.89$	.35
No. days heavy use	3.00 (1-7)	3.00 (2-8)	2.50 (1-7)	$U = 64$	.62
Standard drinks per day	4.50 (1-75)	2.50 (1-26)	5.00 (1-75)	$U = 45$	.48
ATSS					
Used last 28 days? n (%)	50 (42.7)	13 (39.4)	37 (44.0)	$\chi^2(1)=0.21$	.65
No. days of use	4.0 (1-28)	4.0 (1-28)	3.0 (1-28)	$U = 264$	.60
Cannabis					
Used last 28 days? n (%)	41 (35.0)	11 (33.3)	30 (35.7)	$\chi^2(1)=0.06$	.81
No. days of use	7.0 (1-28)	7.0 (1-28)	6.0 (1-28)	$U = 162$	.92
Heroin					
Used last 28 days? n (%)	14 (12.0)	2 (6.1)	11 (13.1)	$\chi^2(1)=1.19$	.28
No. days of use	4.0 (1-28)	7.5 (1-14)	4.0 (1-28)	NA	NA
Other opioid					
Used last 28 days? n (%)	20 (17.1)	5 (15.2)	15 (17.9)	$\chi^2(1)=0.12$	.73
No. days of use	3.5 (1-28)	5.0 (1-14)	3.0 (1-28)	$U = 36$	.87
Cocaine					
Used last 28 days? n (%)	11 (9.4)	3 (9.1)	8 (9.5)	$\chi^2(1)=0.01$	.94
No. days of use	1.0 (1-14)	1.0 (1-11)	1.5 (1-14)	NA	NA
Tranquilisers					
Used last 28 days? n (%)	24 (20.5)	6 (18.2)	18 (21.4)	$\chi^2(1)=0.15$	.70
No. days of use	4.0 (1-28)	9.0 (1-28)	3.0 (1-28)	$U = 53$	.97

Note. $p < .05 = *$, $p < .01 = **$, $p < .001 = ***$

Compared to participants not followed up, individuals in the Follow-up sample were more likely to have used alcohol in the 28 days preceding TC intake. However, rates of heavier than usual alcohol use did not differ between Follow-up participants and those not followed up during the same time period.

Other baseline drug use. Aside from tobacco and alcohol, Evaluation participants were most likely to have used ATSS (42.7%) or cannabis (35.0%) in the 28 days prior to TC intake (Table 10). Tranquilisers (20.5%) and other opioid-based drugs (17.1%) were the next most commonly used substances, followed by heroin (12.0%) and cocaine (9.4%). No participant reported daily use of cocaine in the preceding 28 days, and daily use for ATSS ($n=5$; 4.3%), cannabis ($n=5$; 4.3%), tranquilisers ($n=4$; 3.4%), heroin ($n=2$; 1.7%) or other opioid-based drugs ($n=2$; 1.7%) was disclosed by less than 5% of the Evaluation sample for each substance type. Rates of use for ATSS, cannabis, other opioids, tranquilisers, heroin and cocaine were similar between the Follow-up sample and participants not followed up in the 28 days before TC intake (Table 10). The reported days of use for ATSS, cannabis, other opioids and tranquilisers also did not differ significantly between participants who were or were not followed up.

Baseline polysubstance use. Additional descriptive statistics were calculated to characterise polysubstance use in the baseline TLFB outcome data. Two participants (1.7%) reported no tobacco, alcohol or other drug use in the previous 28 days. Another 31 participants disclosed either only using tobacco ($n=18$; 15.4%) or alcohol ($n=13$; 11.1%) during the same time period. Forty participants (34.2%) reported using only ATSS ($n=15$; 12.8%), cannabis ($n=15$; 12.8%), opioids⁴ ($n=6$; 5.1%), tranquilisers ($n=2$; 1.7%) or cocaine ($n=2$; 1.7%) in the 28 days preceding TC intake. Of these 40 participants, all bar one individual also used alcohol ($n=2$; 1.7%), tobacco ($n=17$; 14.5%), or both alcohol and tobacco ($n=20$; 17.1%) during the

⁴Includes one participant who reported using only heroin in the 28 days prior to TC intake.

same time period. The remaining 44 participants disclosed using two ($n=24$; 20.5%), three ($n=15$; 12.8%) or more than four ($n=5$; 4.3%) substances from more than one drug class in the previous 28 days (i.e., ATS, cannabis, opioids, tranquilisers, or cocaine). Twenty-five of these participants also used tobacco ($n=18$; 15.4%), alcohol ($n=2$; 1.7%), or both tobacco and alcohol ($n=5$; 4.3%) during the same time period.

The Follow-up sample. Separate GL models were performed on TLFB outcomes for tobacco, alcohol, cannabis and ATSs. The GL models for cannabis and ATSs were performed with the intake time-point and outcomes for the exit and 3-month follows as no participants disclosed using either substance 6 or 12 months after leaving the OH NSW program (Table 11). A description of the TLFB outcomes for heroin, other opioids, cocaine or tranquilisers is also provided in a later section.

Table 11. *TLFB outcome data for the Follow-up sample, categorised by substance type (n (%)). Medians (range) are shown for no. standard drinks on heavy alcohol use days.*

	T1: Entry ($n=33$)	T2: Exit ($n=32$)	T3: 3 months ($n=23$)	T4: 6 months ($n=12$)	T5: 12 months ($n=7$)
Used last 28 days? n (%)					
Tobacco/cigarette use	28 (84.8)	28 (87.5)	17 (73.9)	10 (83.3)	5 (71.4)
Alcohol	19 (57.6)	10 (31.3)	13 (56.5)	5 (41.7)	2 (28.6)
ATSs	13 (39.4)	2 (6.3)	2 (8.7)	0 (0.0)	0 (0.0)
Cannabis	11 (33.3)	4 (12.5)	4 (17.4)	0 (0.0)	0 (0.0)
Heroin	2 (6.1)	1 (3.1)	1 (4.3)	NA	NA
Other opioids	5 (15.2)	1 (3.1)	1 (4.3)	0 (0.0)	0 (0.0)
Cocaine	3 (9.1)	0 (0.0)	1 (4.3)	0 (0.0)	0 (0.0)
Tranquilisers	6 (18.2)	1 (3.1)	2 (8.7)	0 (0.0)	0 (0.0)
Standard drinks/day, n (%)					
No alcohol	14 (42.4)	22 (68.8)	10 (43.5)	7 (58.3)	5 (71.4)
1-4 standard drinks	2 (6.1)	2 (6.3)	9 (39.1)	2 (16.7)	1 (14.3)
5-10 standard drinks	8 (24.2)	5 (15.6)	3 (13.0)	2 (16.7)	1 (14.3)
11-20 standard drinks	5 (15.2)	1 (4.4)	1 (4.4)	0 (0.0)	0 (0.0)
21 or more standard drinks	4 (12.1)	0 (0.0)	0 (0.0)	1 (8.3)	0 (0.0)
Heavy alcohol use					
Heavy use last 28 days?	8 (24.2)	3 (9.4)	4 (17.4)	1 (8.3)	0 (0.0)
No. days heavy use	3.0 (2-8)	2.0 (1-2)	2.0 (1-15)	1.0 (NA)	NA
Standard drinks per day	2.5 (1-26)	2.0 (1-2)	4.5 (3-6)	3.0 (NA)	NA

Tobacco use. Most Follow-up participants continued to use cigarettes or tobacco after leaving the OH NSW residential program (Table 11). Most participants also smoked cigarettes or tobacco on each of the 28 days prior to the exit ($n=26$, 81.3%), 3-month ($n=15$, 65.2%), 6-month ($n=9$, 75.0%) and 12-month ($n=5$, 71.4%) interviews. A trend was found for the main effect of Time for days of tobacco use ($\chi^2(4) = 8.30$, $p = .08$; Figure 4). The number of days that Follow-up participants smoked cigarettes or tobacco in the preceding 28 days was similar between TC intake and program exit ($p=.79$).

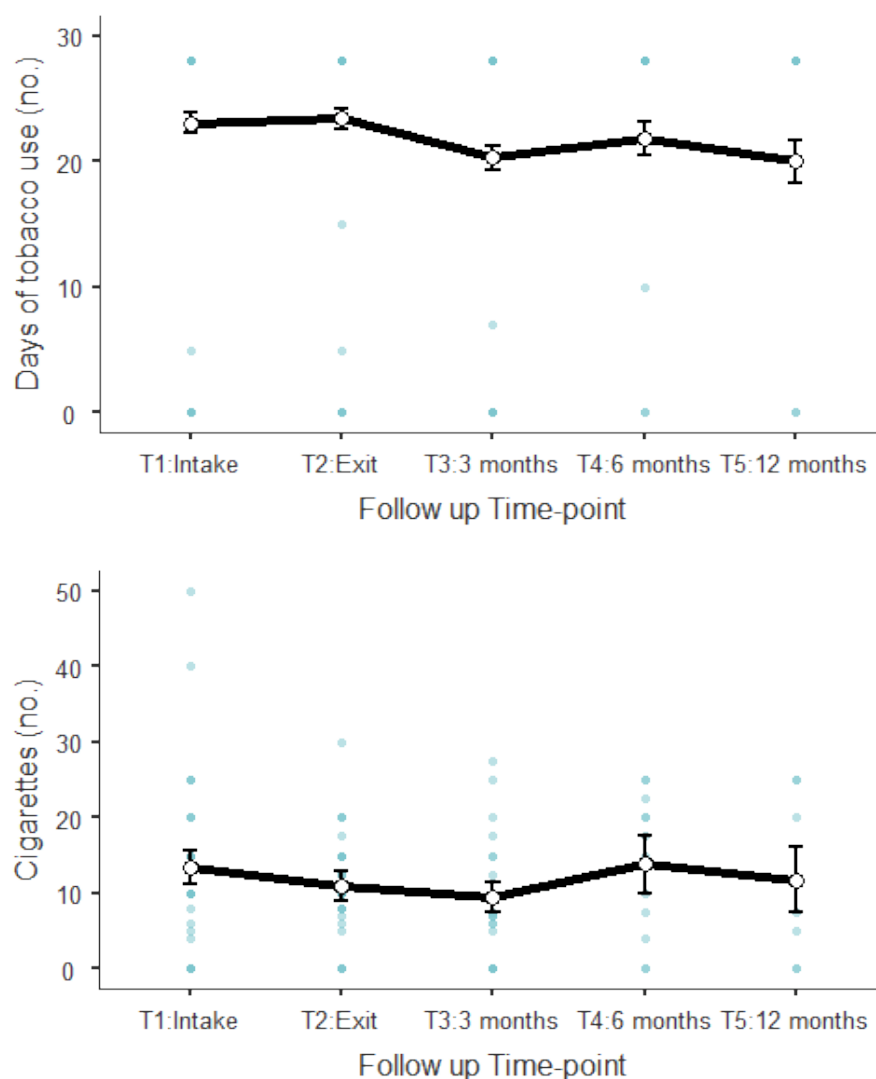


Figure 4. Estimated marginal means of TLFB outcomes for tobacco, categorised by time point. Days of use for tobacco (top) and number of cigarettes per day (bottom) are shown. Vertical bars represent standard errors. The actual days of use and number of cigarettes reported by each participant are denoted by blue dots.

However, post-hoc comparisons indicated there was a significant reduction in days of tobacco use between program exit and the 3-month follow up ($p=.02$), a reduction that was maintained 6 months ($p=.36$), and then 12 months ($p=.40$), after program exit. The main effect of Time for the number of cigarettes used per day in the preceding 28 days did not reach statistical significance ($\chi^2(4) = 2.28, p = .69$; Figure 4). This result indicated that the amount of cigarettes used by Follow-up participants at intake were of similar magnitude to the amounts reported at the exit, 3-month, 6-month and 12-month interviews.

Alcohol use. Over 50% of the Follow-up sample had used alcohol in the 28 days prior to TC intake (Table 11). Approximately 25% of the Follow-up sample reported heavier than usual alcohol use in the same time period, though at each follow up time-point the proportion of participants who reported heavy use was below 20%. Six participants (18.2%) drank alcohol on all 28 days before TC intake. A minority of the Follow-up sample also reported drinking alcohol on each of the 28 days before the exit ($n=2, 6.3\%$), 3-month ($n=2, 8.7\%$), 6-month ($n=1, 8.3\%$) and 12-month ($n=1, 14.3\%$) interviews. At TC intake, approximately 50% of the Follow-up sample disclosed drinking more than four standard drinks per drinking day, which is above the recommended NHMRC guidelines for reducing the risk of alcohol-related injury on a single occasion (NHMRC, 2009). However, the proportion of participants drinking alcohol above this level was less than 30% for participants interviewed at the exit ($n=6, 18.75\%$), 3-month ($n=4, 17.4\%$), 6-month ($n=3, 25.0\%$) and 12-month ($n=1, 14.3\%$) time-points. The main effect of Time for days of alcohol use was not significant for the Follow-up sample ($\chi^2(4) = 3.88, p = .42$; Figure 5). However, a trend occurred for the same main effect in the number of standard drinks ingested per day of drinking ($\chi^2(4) = 9.50, p = .05$). There was a significant reduction in the number of standard drinks consumed in comparisons

between TC intake and the exit interview ($p=.02$), and this decrease was maintained 3 months ($p=.79$), 6 months ($p=.54$) and 12 months ($p=.55$) after program exit.

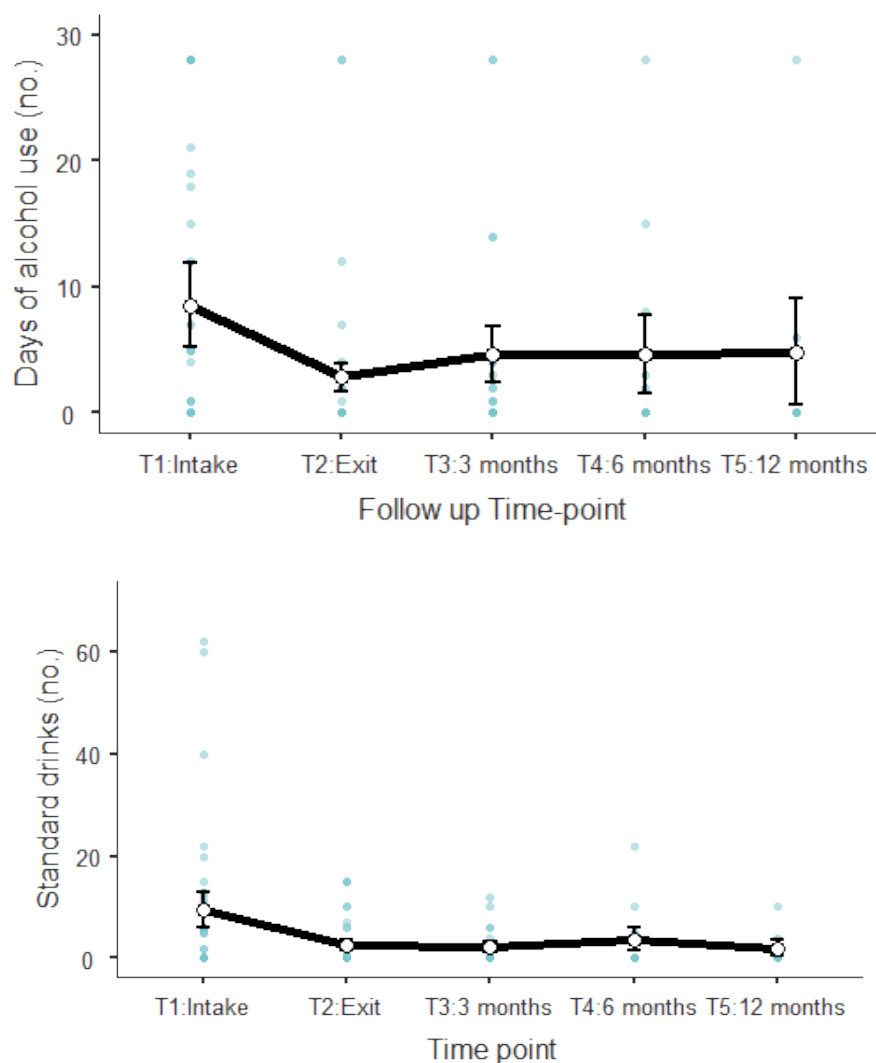


Figure 5. Estimated marginal means of TLFB outcomes for alcohol, categorised by time point. Days of use for alcohol (top) and number of standard drinks per day (bottom) are shown. Vertical bars represent standard errors. The actual days of use and number of standard drinks reported by each participant are denoted by blue dots.

Other drug use. Approximately 40% of the Follow-up sample reported ATS use in the 28 days preceding TC intake (Table 11). However less than 10% of participants followed up at each time-point disclosed ATS use. Cannabis use was reported by 33% of Follow-up participants at TC intake. Similar to ATSs, there was a reduction in the number of participants who reported cannabis use at follow-up, although proportionally more than 10%

of the Follow-up sample disclosed cannabis use during the exit and 3-month interview (Table 12). The GL model for ATS use indicated there was a main effect of Time, $\chi^2(4) = 12.5, p < .002$ (Figure 6). There was a significant reduction in the days of reported ATS use from TC intake to program exit ($p < .001$), a reduction that was maintained 3 months later ($p = .001$). The main effect for Time also reached significance for days of cannabis use, $\chi^2(2) = 9.54, p = .008$ (Figure 6). Like ATS use, there was a significant reduction in the days of reported cannabis use from TC intake to program exit ($p < .001$). However, this decrease was not maintained, as the average number of cannabis use days increased from TC exit to the 3-month follow-up ($p = .005$).

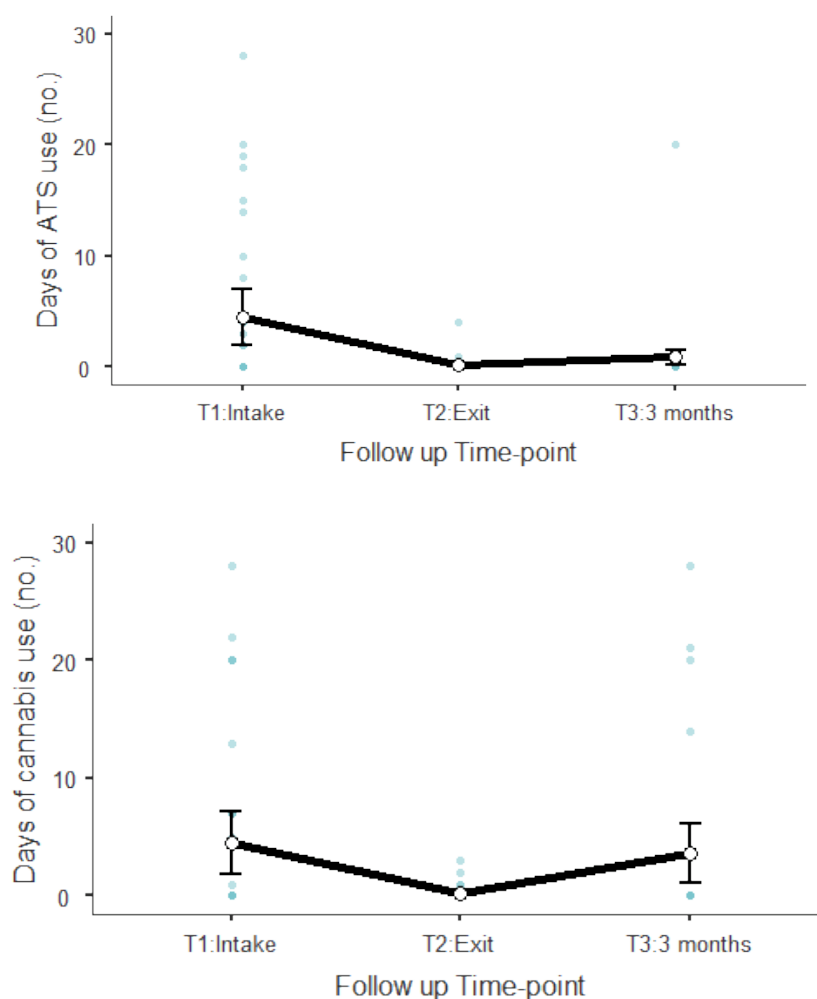


Figure 6. Estimated marginal means of TLFB outcomes for ATSS (top) and cannabis (bottom), categorised by time point. Vertical bars represent standard errors. The actual days of use are denoted by blue dots.

Regarding opioid use, two Follow-up participants (6.0%) disclosed heroin use at TC intake (Table 11). One of these participants reported heroin use at their exit and 3-month interview, and were then lost to follow-up. The same participant also disclosed other opioid, cannabis and tranquiliser use during their 3-month follow up. The other participant was also lost to follow up after their 6-month interview, however they did not report heroin or other opioid use at their exit, 3-month or 6-month interview. In total, five Follow-up participants (15.2%) reported other opioid use at TC intake, but only one of these individuals reported other opioid use at follow up during their exit interview. Three Follow-up participants (9.1%) disclosed cocaine use at TC intake, however all three individuals were lost to follow-up after their exit interview. None reported any days of cocaine use during their exit interview. Lastly, six Follow-up participants (18.2%) reported tranquiliser use when entering the OH NSW residential program. Two of these participants were lost to follow up, and of the remaining four, only one disclosed tranquiliser use during their follow-up interviews.

Polysubstance use. Similar to baseline TLFB outcomes, additional descriptive statistics were calculated to characterise polysubstance use in the Follow-up sample (Table 12). Most of the Follow-up sample had used one or more drug types in the 28 days prior to TC intake, however at each of the follow up interviews proportionally more participants had not used any type of drug in the same time period. A minority of participants were completely abstinent from tobacco, alcohol and other drug types at each follow up time-point (Table 12). A majority of Follow-up sample who had not used any drug type during the past 28 days were more likely to report using only tobacco, only alcohol or only tobacco and alcohol at the exit, 3-month and 6-month interviews. Participants who reported using one or more drug types at each follow up time-point were also likely to report tobacco and alcohol use during

the exit ($n=4$, 12.5%) and 3-month ($n=4$, 17.4%) interviews. No participants interviewed for the 6-month and 12-month follow ups disclosed any other drug use.

Table 12. *Polysubstance use for the Follow-up sample, based on TLFB outcome data (n (%)).*

	T1: Entry ($n=33$)	T2: Exit ($n=32$)	T3: 3 months ($n=23$)	T4: 6 months ($n=12$)	T5: 12 months ($n=7$)
Drug classes last 28 days^a					
None	12 (36.4)	25 (78.1)	18 (78.3)	12 (100.0)	7 (100.0)
One	7 (21.2)	5 (15.6)	2 (8.7)	0 (0.0)	0 (0.0)
Two	8 (24.2)	2 (6.3)	1 (4.4)	0 (0.0)	0 (0.0)
Three	6 (18.2)	0 (0.0)	1 (4.4)	0 (0.0)	0 (0.0)
Four or more	0 (0.0)	0 (0.0)	1 (4.4)	0 (0.0)	0 (0.0)
Tobacco and alcohol use					
No substance use	0 (0.0)	1 (3.1)	2 (8.7)	0 (0.0)	1 (14.3)
Only tobacco	6 (18.2)	18 (56.3)	7 (30.4)	7 (58.3)	4 (57.1)
Only alcohol	3 (9.1)	3 (9.4)	4 (17.4)	2 (16.7)	1 (14.3)
Only tobacco and alcohol	3 (9.1)	3 (9.4)	5 (21.7)	3 (25.0)	1 (14.3)

^aexcludes alcohol and tobacco

3.1.5.2 Substance dependence

Baseline SDS outcomes. On average, follow-up up participants ($M=10.0$, $SD=2.7$) reported higher substance dependence than other participants ($M=8.6$, $SD=3.3$), although this difference was not significant (Mann-Whitney U-Test, $U = 1681$, $p=.07$). The SDS substance class most often nominated was ATs ($n=63$, 53.8%), followed by alcohol ($n=29$, 24.8%), heroin ($n=11$, 9.4%), cannabis ($n=7$, 6.0%), other opioids ($n=3$, 2.6%), cocaine ($n=3$, 2.6%), and tranquillisers ($n=1$, 0.9%). These totals differ from the primary substance of concern due to 11 participants (9.4%) completing the SDS for a different substance. No relationship was found between the SDS substance nominated and whether the participant completed one or more follow up interviews (Fisher's exact test = 7.07, $p = .26$). Nearly all participants scored higher than the SDS cut-off threshold for their nominated substance ($n=113$, 96.6%; Table 13). At TC intake, four participants not followed up scored below the amphetamine SDS cut-off (≤ 3). Internal consistency is also shown to vary as a function of the substance nominated on the SDS (Deady, 2009). To examine this, relevant analyses were performed for

participants who nominated ATs or alcohol as their SDS substance. Internal consistency was stronger for the SDSs completed for amphetamines ($\alpha=.71$) than for alcohol ($\alpha=.59$).

Table 13. *SDS scores for the Evaluation and Follow-up sample, categorised by substance type (mean, SD). Separate values for participants not followed up are also provided.*

	Total (N=117)	Follow-up (n=33)		% above SDS cut-off	No follow-up (n=84)		% above SDS cut-off
		n	SDS		n	SDS	
ATs	8.3 (3.4)	14	9.2 (2.6)	14 (42.4)	50	8.0 (3.6)	46 (54.8)
Alcohol	10.0 (2.6)	11	10.6 (2.4)	11 (33.3)	18	9.6 (2.8)	18 (21.4)
Heroin	10.7 (2.8)	3	10.7 (3.8)	3 (9.1)	8	10.6 (2.6)	8 (9.5)
Cannabis	10.7 (2.6)	3	13.0 (1.0)	3 (9.1)	4	9.0 (2.2)	4 (4.8)
Other opioid	7.3 (1.2)	1	8.0 (NA)	1 (3.0)	2	7.0 (1.4)	2 (2.4)
Cocaine	7.0 (1.0)	1	7.0 (NA)	1 (3.0)	2	7.0 (1.4)	2 (2.4)
Tranquillisers ^a	7.0 (NA)	1	7.0 (NA)	1 (3.0)	0	NA	NA

Note. SDS cut-off ranges: amphetamines (≥ 3), alcohol (≥ 3), opioids (≥ 5), cannabis (≥ 3), cocaine (≥ 3)

^a The tranquilliser referred to for this participant was benzodiazepine (SDS cut-off ≥ 5)

The Follow-up sample. The linear ME model for SDS scores indicated there was a significant main effect of Time, $F(4, 83)=8.99, p<.001$ (Figure 7). A reduction in SDS scores from TC intake to program exit was significant ($p=.009$), and a trend was found for a further reduction from program exit to the 3-month follow up ($p=.07$). Dependence scores were of similar magnitude at the 3-month and 6-month interviews ($p=.47$), however SDS scores continued to decrease from the 6-month to the 12-month follow up ($p=.009$). Table 15 shows the SDS scores of the participants from the Follow-up sample, as well as the number of participants who were above the SDS cut-off threshold for their nominated substance at each follow up interview. The proportion of participants who were dependant on ATs decreased over time, however only one of these participants could be interviewed at the 6-month and 12-month time point. Approximately 30 to 40% of participants who completed the SDS for alcohol remained dependent upon the substance up to 6 months after program exit, although at 12 months four out of these six participants scored below the SDS cut-off for alcohol (≤ 3).

All four participants who completed the SDS for heroin, other opioid or tranquiliser dependence at TC intake were above the SDS cut-off for these drug types when they completed any follow-up interview (≤ 5 ; Table 14).

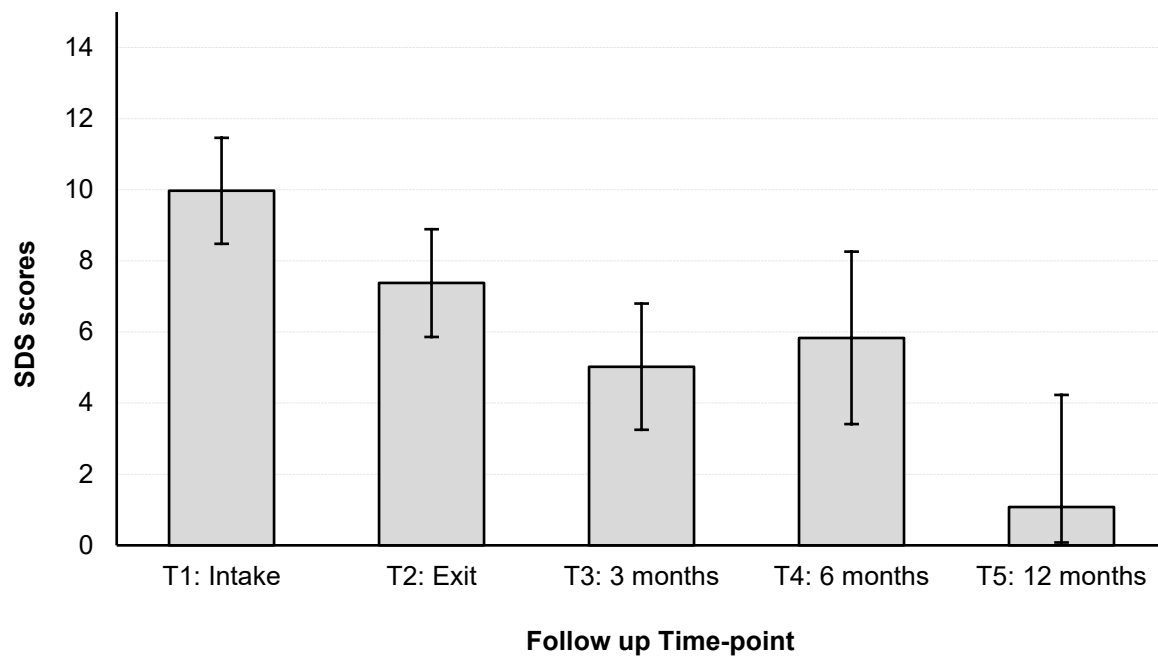


Figure 7. Estimated marginal mean SDS scores for the Follow-up sample, categorised by time point. Vertical bars represent 95% confidence intervals.

Table 14. *SDS scores for the Follow-up sample, categorised by substance type (median, range).*

	T1: Entry (n=33)	T2: Exit (n=32)	T3: 3 months (n=23)	T4: 6 months (n=12)	T5: 12 months (n=7)
ATSS^a					
Last 28 days? n (%)	15 (45.5)	13 (40.6)	7 (30.4)	3 (25.0)	1 (14.3)
SDS score	8.0 (6-14)	8.0 (0-15)	0.0 (0-7)	0.0 (0-5)	0.0 (NA)
% above SDS cut-off	15 (45.5)	9 (28.1)	1 (4.4)	0 (0.0)	0 (0.0)
Alcohol					
n (%)	11 (33.3)	10 (31.3)	10 (43.5)	7 (58.3)	6 (85.7)
SDS score	11.0 (7-14)	8.5 (4-15)	7.0 (0-15)	8.0 (0-15)	0.5 (0-5)
% above SDS cut-off	11 (33.3)	10 (31.3)	8 (34.8)	5 (41.7)	2 (28.6)
Opioids/Tranquilisers					
n (%)	4 (12.1)	4 (12.5)	2 (8.7)	1 (8.3)	NA
SDS score	8.5 (7-15)	9.5 (8-13)	11.5 (11-12)	15.0 (NA)	NA
% above SDS cut-off	4 (12.1)	4 (12.5)	2 (8.7)	1 (8.3)	NA
Cannabis					
Last 28 days? n (%)	3 (9.1)	2 (6.25)	1 (4.4)	1 (8.3)	NA
SDS score	13.0 (12-14)	4.5 (1-8)	15.0 (NA)	3.0 (NA)	NA
% above SDS cut-off	3 (9.1)	1 (3.1)	1 (4.4)	0 (0.0)	NA

Note. SDS cut-off ranges: amphetamines (≥ 3), alcohol (≥ 3), opioids (≥ 5), cannabis (≥ 3), cocaine (≥ 3), benzodiazepine (SDS cut-off ≥ 5)

^aIncludes cocaine as only one Follow-up participant reported cocaine use at TC intake.

Finally, dependence on cannabis appeared to decrease for select participants, and not for others. However similar to SDS scores for ATSS, opioids and tranquilisers, these values should be interpreted with caution as few participants who completed the SDS for cannabis were followed up at the exit, 3-month, 6-month and 12-month interviews.

3.1.5.3 Psychological distress

Baseline K10+LM outcomes. At baseline, the average K10+LM distress score of the Evaluation sample fell into the high risk category (Table 15). The distress scores of participants who were or were not followed up were also similar. Approximately 40% of the Evaluation sample reported a baseline distress score of more than 30, indicating these individuals were at a greater risk for developing mental health issues related to depression and anxiety compared to the rest of the sample during TC intake (Andrews & Slade, 2001;

Deady, 2009). Forty-four percent of participants had experienced days in which they were unable to take part in everyday activities during to feelings of distress, and for 16 participants (13.7%) this included every day of the 28 days prior to TC intake (Table 15). Approximately 34% had cut down on their everyday activities at least one day during the same time period, which included 3 participants (2.6%) who had 28 cut down days prior to TC intake.

Proportionally more of the Follow-up sample had experienced unable days in the last 28 days compared to participants not followed up, however this relationship was not significant (Table 15).

Twenty-eight participants (23.9%) had experienced unable and cut down days prior to TC intake, but again this rate did not differ between the Follow-up sample ($n=8$) and other participants ($n=20$; $\chi^2(1)=0.002$, $p=.96$). Nearly 50% of the Evaluation sample had consulted with a health professional about their feelings of distress over the last 28 days. The relationship between consultations and whether the participant was part of the Follow-up sample was also significant (Table 15). Proportionally more Follow-up participants had consultations about their distress feelings compared to participants not followed up.

Table 15. *K10+LM baseline data for the Follow-up sample. Separate values for participants not followed up are also provided.*

	Total (N=117)	Follow-up (n=33)	No follow-up (n=84)	Test statistic	p-value
Distress score, mean (SD)	26.4 (8.4)	26.6 (8.0)	26.3 (8.6)	$U = 1424$	.82
Risk category, n (%)					
Very high risk (>30)	47 (40.2)	14 (42.4)	33 (39.3)	$\chi^2(3)=1.44$	.70
High risk (22-29)	34 (29.1)	11 (33.3)	23 (27.4)	-	-
Moderate risk (16-21)	22 (18.8)	4 (12.1)	18 (21.4)	-	-
Low risk (10-15)	14 (12.0)	4 (12.1)	10 (11.9)	-	-
Days unable^a					
Last 28 days? n (%)	51 (43.6)	18 (54.5)	33 (39.3)	$\chi^2(1)=2.24$	.13
No. of days unable, mean (SD)	13.1 (11.3)	12.4 (11.6)	13.5 (11.3)	$U = 1753$	.15
Days cut down^b					
Last 28 days? n (%)	40 (34.2)	10 (30.3)	30 (35.7)	$\chi^2(1)=0.31$	.58
No. of days cut down, mean (SD)	7.6 (8.0)	10.1 (10.0)	6.8 (7.3)	$U = 1348$	.78
Health professional^c					
Last 28 days? n (%)	56 (47.9)	21 (63.6)	35 (41.7)	$\chi^2(1)=4.58$	.03*
No. of consults, mean (SD)	3.3 (4.5)	4.2 (4.4)	2.8 (4.6)	$U = 1753$	.02*
Physical health^d, n (%)					
Not at all	85 (72.6)	25 (75.8)	60 (71.4)	$\chi^2(4)=2.36$	.67
A little of the time	10 (8.5)	3 (9.1)	7 (8.3)	-	-
Some of the time	12 (10.3)	4 (12.1)	8 (9.5)	-	-
Most of the time	5 (4.3)	0 (0.0)	5 (6.0)	-	-
All of the time	5 (4.3)	1 (3.0)	4 (4.8)	-	-

Note. $p < .05 = *$, $p < .01 = **$, $p < .001 = ***$

^aDays unable = How many days were you TOTALLY UNABLE to work, study or manage your day to day activities because of these [distress] feelings?

^bDays cut down = [Aside from unable days] How many days were you able to work, study or manage your day to day activities, but had to CUT DOWN on what you did because of these [distress] feelings?

^cHealth professional = How many times have you seen a doctor or any other health professional about these [distress] feelings?

^dPhysical health = How often have physical health problems been the cause of these [distress] feelings?

Moreover, Follow-up participants who had seen a health professional had significantly more consultations in the last 28 days compared to participants who were not followed up. Thirty two participants (28.4%) reported that their distress feelings over the last 28 days were related to physical health problems (Table 15). Ten of these participants (8.6%) reported that this association between distress and their physical health had occurred most or all of the time.

The Follow-up sample. The generalised ME model for K10+LM distress scores showed there was a significant main effect of Time, $\chi^2(4) = 109, p < .001$ (Figure 8). Compared to intake scores, levels of distress were significantly reduced at TC exit ($p < .001$).

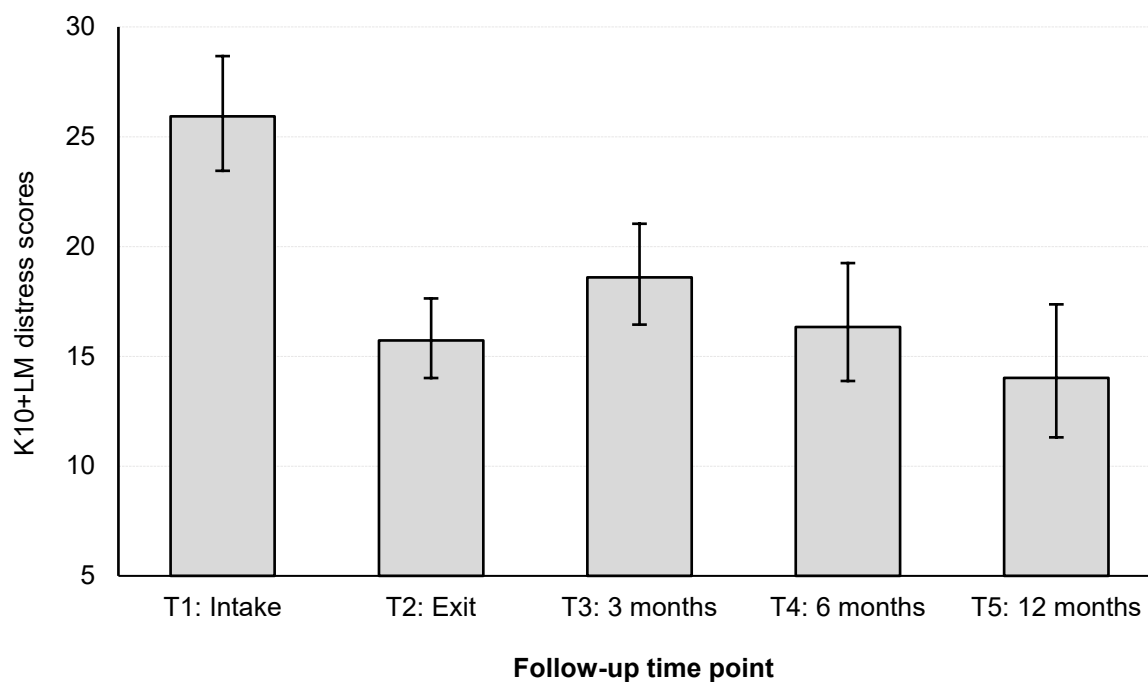


Figure 8. Estimated marginal mean K10+LM distress scores for the Follow-up sample, categorised by time point. Vertical bars represent 95% confidence intervals.

Average levels of distress rose again at the 3-month follow up interview ($p = .01$) and remained at this magnitude 6 months ($p = .13$) and 12 months ($p = .21$) after program exit. Post-hoc comparisons with Helm-Bonferroni corrections applied indicated that despite this increase in K10 distress scores, levels of distress at follow up were still significantly reduced compared to TC intake scores (all $ps < .001$). Average distress scores at the exit, 3-month, 6-month and 12-month follow ups also fell within a moderate to low risk range. The proportion of participants whose distress scores fell within the high and very high risk categories also decreased over time (Table 16). At each time-point, most participants did not link their feelings of distress with their physical health.

A trend for the main effect of Time was found for the number of unable days reported by participants in the previous 28 days ($\chi^2(4) = 8.88, p = .06$; Figure 9). Significant main effects of Time also emerged for number of cut down days ($\chi^2(4) = 48.7, p < .001$) and health professional consults ($\chi^2(4) = 12.4, p = .01$). There were significant decreases in the number of unable days ($p = .01$), cut down days ($p < .001$), and health professional consultations ($p < .001$) reported by the Follow-up sample from TC intake to program exit.

These reductions were maintained 3 months, 6 months and 12 months after program exit for unable days and number of health professional consultations (all $ps > .08$). For cut down days, however, at the 3-month follow up the number of days reported by Follow-up participants increased to an average level that was higher than disclosed at TC intake ($p < .001$, Figure 9). At 6 months, the number of cut down days decreased again ($p < .001$), and this reduction was maintained at the 12 month follow up for the relevant participants.

Table 16. *Descriptive statistics for Follow-up data from the K10+LM.*

	T1: Entry (n=33)	T2: Exit (n=32)	T3: 3 months (n=23)	T4: 6 months (n=12)	T5: 12 months (n=7)
Risk category					
Very high risk (>30)	14 (42.4)	2 (6.3)	3 (13.0)	1 (8.3)	0 (0.0)
High risk (22-29)	11 (33.3)	3 (9.4)	6 (26.1)	2 (16.7)	1 (14.3)
Moderate risk (16-21)	4 (12.1)	8 (25.0)	7 (30.4)	3 (25.0)	3 (42.9)
Low risk (10-15)	4 (12.1)	19 (59.4)	7 (30.4)	6 (50.0)	3 (42.9)
Days unable^a					
Last 28 days?	18 (54.5)	9 (28.1)	9 (39.1)	4 (33.3)	2 (28.6)
Days cut down^b					
Last 28 days?	10 (30.3)	9 (28.1)	8 (34.8)	4 (33.3)	3 (42.4)
Health professional^c					
Last 28 days?	21(63.6)	9 (28.1)	9 (39.1)	4 (33.1)	3 (42.9)
Physical health^d					
Not at all	25 (75.8)	23 (71.9)	13 (56.5)	9 (75.0)	4 (57.1)
A little of the time	3 (9.1)	3 (9.4)	6 (26.1)	2 (16.7)	1 (14.3)
Some of the time	4 (12.1)	2 (6.3)	2 (8.7)	0 (0.0)	0 (0.0)
Most of the time	0 (0.0)	2 (6.3)	1 (4.3)	1 (8.3)	0 (0.0)
All of the time	1 (0.9)	2 (6.3)	1 (4.3)	0 (0.0)	2 (28.6)

^aDays unable = How many days were you TOTALLY UNABLE to work, study or manage your day to day activities because of these [distress] feelings?

^bDays cut down = [Aside from unable days] How many days were you able to work, study or manage your day to day activities, but had to CUT DOWN on what you did because of these [distress] feelings?

^cHealth professional =How many times have you seen a doctor or any other health professional about these [distress] feelings?

^dPhysical health = How often have physical health problems been the cause of these [distress] feelings?

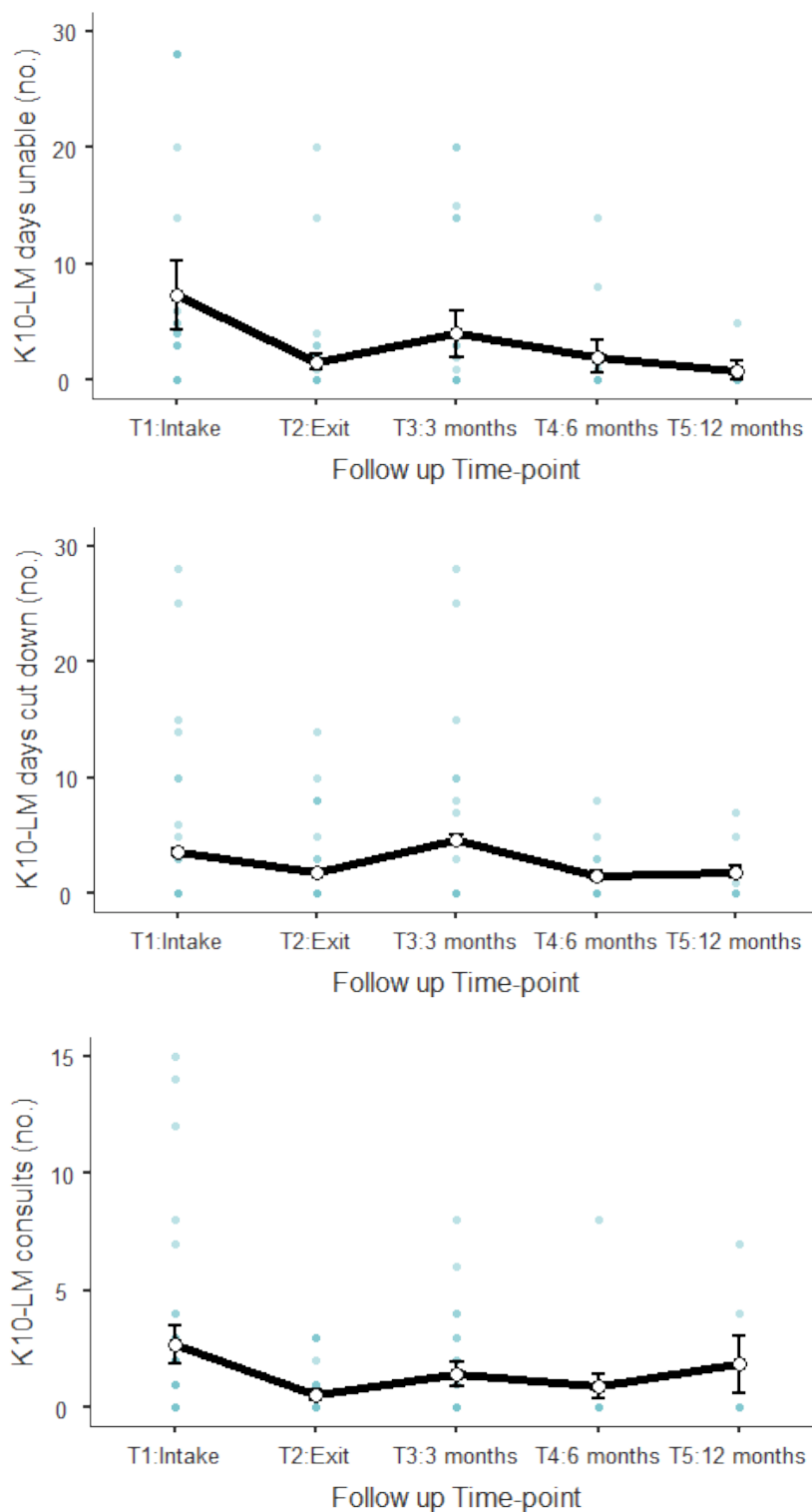


Figure 9. Estimated marginal means of the K10+LM outcomes for unable days (top), cut down days (middle) and number of consultations (bottom), categorised by time point. Values refer to the 28 days prior to the follow up time-point. Vertical bars represent standard errors. The actual unable days, cut down days and number of consultations reported by each participant are denoted by blue dots.

3.1.5.4 Quality of life

Intake EUROHIS-QoL8 scores were similar between participants from the Follow-up sample and those not followed up ($N=116$; Table 17). There were also no major differences between the responses of the Follow-up sample and participants not followed up to each of the EUROHIS-QoL8 domains specified by NADA (NADA, 2012). The EUROHIS-QoL8 baseline scores were also consistent with prior research (Harley, Pit, Rees, & Thomas, 2018), aside from two differences. Ratings of satisfaction with Environment and Social relationships were slightly higher for the Evaluation sample compared to the baseline EUROHIS-QoL8 scores of the Harley et al. study. The linear ME model for EUROHIS-QoL8 scores indicated there was a significant main effect of Time, $F(4, 76)=15.94$, $p<.001$ (Figure 10). The quality of life for the Follow-up sample improved from TC intake to TC exit ($p<.001$), and this increase in EUROHIS-QoL8 scores was maintained 3 months, 6 months and 12 months after TC exit (all $ps > .29$). Increases in the quality of life for Follow-up participants also appeared to be consistent across each of the EUROHIS-QoL8 domains (Table 18).

Table 17. *EUROHIS-QoL8 baseline data for the Follow-up sample. Separate values for participants not followed up are also provided.*

	Total ($N=116$)	Follow-up ($n=33$)	No follow-up ($n=83$)	Test statistic	p -value
EUROHIS-QoL8 score, mean (SD)	26.4 (5.0)	25.0 (5.0)	25.3 (5.0)	$U = 1323$	.77
QoL8 domains, mean (SD)					
Quality of life (/5)	3.0 (1.1)	2.7 (1.0)	3.0 (1.1)	$U = 1154$	.17
Perception of health (/5)	3.0 (0.9)	2.8 (0.8)	3.0 (1.1)	$U = 1149$	.15
Physical health (/10)	6.0 (1.8)	6.1 (2.0)	6.0 (1.7)	$U = 1368$	.99
Environment (/10)	7.2 (1.4)	7.3 (1.2)	7.2 (1.5)	$U = 1379$	.95
Psychological health (/5)	2.9 (1.1)	2.8 (1.3)	2.9 (1.1)	$U = 1355$	.93
Social relationships (/5)	3.2 (1.0)	3.3 (1.1)	3.2 (1.0)	$U = 1453$	.59

Note. Quality of life = overall quality of life (Q1), Perception of health = own perception of overall health (Q2), Physical health = physical quality of life (Q3: Energy, Q5:= Daily living), Environment = satisfaction with environment (Q4: Money, Q8: Living place), Psychological health = psychological quality of life (Q6), Social relationships = satisfaction with social relationships (Q7).

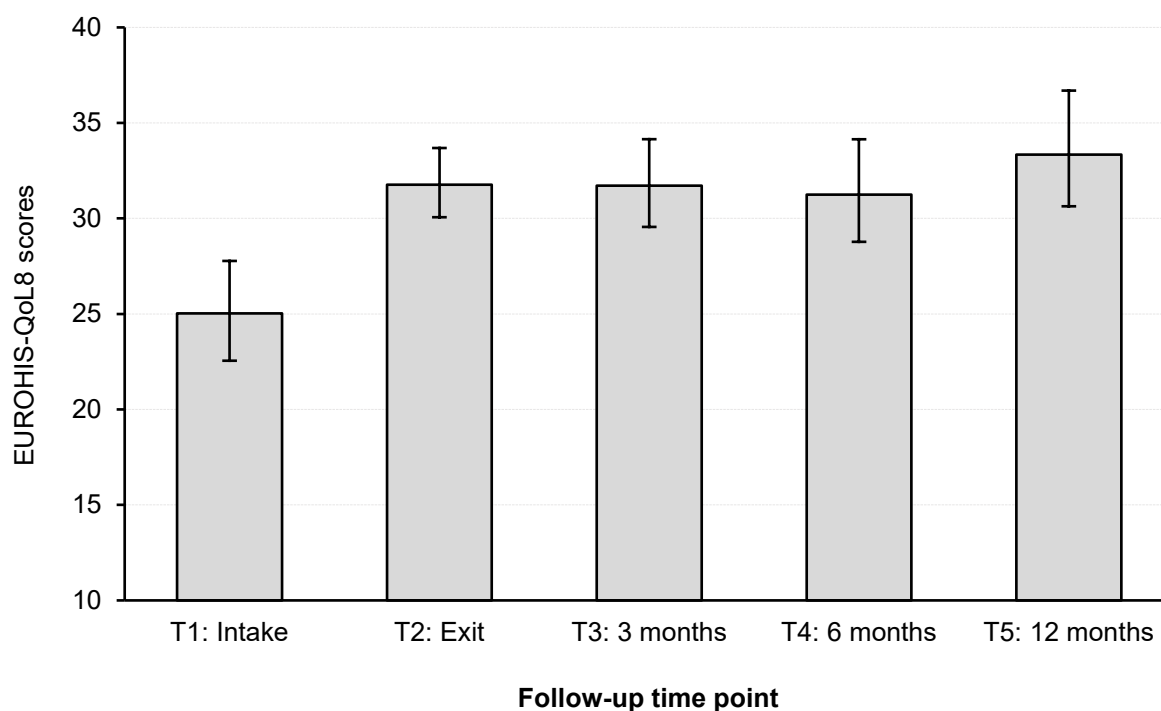


Figure 10. Estimated marginal mean EUROHIS-QoL8 scores for the Follow-up sample, categorised by time point. Vertical bars represent 95% confidence intervals.

Table 18. Follow-up data for the EUROHIS-QoL8 domains. Medians (range) are shown for each domain.

	T1: Entry (n=33)	T2: Exit (n=32)	T3: 3 months (n=23)	T4: 6 months (n=12)	T5: 12 months (n=7)
QoL8 domains					
Quality of life (/5)	3.0 (1-5)	4.0 (2-5)	4.0 (1-5)	4.0 (3-5)	4.0 (3-5)
Perception of health (/5)	3.0 (2-4)	4.0 (1-5)	4.0 (2-5)	4.0 (2-5)	4.0 (2-4)
Physical health (/10)	6.0 (2-10)	8.0 (3-10)	8.0 (4-10)	8.0 (6-10)	9.0 (8-9)
Environment (/10)	8.0 (5-10)	8.0 (6-10)	8.0 (6-10)	9.0 (6-10)	8.0 (6-10)
Psychological health (/5)	3.0 (1-4)	4.0 (2-5)	4.0 (1-5)	3.5 (2-5)	4.0 (2-4)
Social relationships (/5)	3.0 (1-5)	4.0 (2-5)	4.0 (2-5)	4.0 (1-5)	4.0 (3-5)

Note. Quality of life = overall quality of life (Q1), Perception of health = own perception of overall health (Q2), Physical health = physical quality of life (Q3: Energy, Q5:= Daily living), Environment = satisfaction with environment (Q4: Money, Q8: Living place), Psychological health = psychological quality of life (Q6), Social relationships = satisfaction with social relationships (Q7).

3.1.6 Secondary research questions

3.1.6.1 SES outcomes

Baseline SES outcomes. Over 80% of the Evaluation sample were receiving government temporary benefits or a pension as their main source of financial support when they entered the TC of OH NSW (Table 20). Most of the sample also typically lived in private (35.9%) or rental (33.3%) accommodation at baseline. At TC intake, nearly 14% of the Evaluation sample gave their usual place of accommodation as prison or detention centre.

Approximately 20% of participants typically lived alone outside of the TC, while almost 35% lived with their parents or other relatives. The remainder of the Evaluation sample usually lived with their partner or children (15.4%), with other residents or housemates (7.7%), or with friends (6.8%). More than 60% of the Evaluation sample reported they had been involved in criminal activity within the three months prior to TC intake, and 26 (22.2%) of these individuals reported having been arrested in the same time period (Table 20). Regarding analysis, only a trend was found for the relationship between usual place of accommodation and whether the participant was a part of the Follow-up sample or not (Table 20).

Proportionally more of the Follow-up sample usually lived in rental or supported accommodation outside of the TC compared to participants not followed up. Also, proportionally more participants not followed up were usually imprisoned before entering the OH NSW residential program.

The Follow-up sample. The pattern of financial income, usual accommodation type and the individuals that the Follow-up participant lived with remained largely consistent across each of the follow up time-points (Table 20). In regards to financial income, a minority of the Follow-up sample were in full-time, part-time, or other forms of employment when

interviewed at the exit ($n=5$, 15.6%), 3-month ($n=3$, 13.0%), 6-month ($n=2$, 8.7%), and 12-month ($n=2$, 28.6%) time-points.

Table 19. *Baseline data for SES outcomes for the Evaluation sample, including main source of financial income, usual place of accommodation, who the participant usually lived with and criminal activity. Separate values for participants in the Follow-up sample and those not followed up are provided.*

	Total (N=117)	Follow-up (n=33)	No follow-up (n=84)	Test statistic	p-value
Main income source, n (%)					
Temporary benefit	95 (81.2)	27 (81.8)	68 (81.0)	FET=1.19	.94
Pension	12 (10.3)	3 (9.1)	9 (10.7)	-	-
Full-time employment	5 (4.3)	2 (6.1)	3 (3.6)	-	-
No income	4 (3.4)	1 (3.0)	3 (3.6)	-	-
Part-time employment	1 (0.9)	0 (0.0)	1 (1.2)	-	-
Usually live in a..., n (%)					
Private house or flat	42 (35.9)	11 (33.3)	31 (36.9)	$\chi^2(6)=11.79$	.07
Rented house or flat	39 (33.3)	16 (48.5)	23 (27.4)	-	-
Prison/detention centre	16 (13.7)	2 (6.1)	14 (15.5)	-	-
No usual residence	6 (5.1)	0 (0.0)	6 (7.1)	-	-
Supported accommodation ^a	5 (4.3)	3 (9.1)	2 (2.4)	-	-
Other treatment facility ^b	5 (4.3)	1 (3.0)	4 (4.8)	-	-
Boarding house	4 (3.4)	0 (0.0)	4 (4.8)	-	-
Usually live with? n (%)					
Alone	24 (20.5)	6 (18.2)	18 (21.4)	FET=7.56	.57
With family	40 (34.2)	11 (33.3)	29 (33.3)	-	-
<i>Parents</i>	33 (28.2)	9 (27.3)	24 (28.6)	-	-
<i>Other relatives</i>	7 (6.0)	2 (6.1)	5 (6.0)	-	-
With partner/children	18 (15.4)	6 (18.2)	12 (18.2)	-	-
<i>Partner only</i>	6 (5.1)	1 (3.0)	5 (6.0)	-	-
<i>Child(ern) only</i>	4 (3.4)	2 (6.1)	2 (2.4)	-	-
<i>Partner and child(ern)</i>	8 (6.8)	3 (9.1)	5 (6.0)	-	-
In custody	16 (13.7)	2 (6.1)	14 (15.5)	-	-
Residents/housemates	9 (7.7)	4 (12.1)	5 (6.0)	-	-
Friends	8 (6.8)	4 (12.1)	4 (4.8)	-	-
Not known	2 (1.7)	0 (0.0)	2 (2.4)	-	-
Crime in last 3 months? n (%)					
	72 (61.5)	17 (51.5)	55 (65.5)	$\chi^2(1)=1.95$	.12
Arrests in last 3 months, n (%)^c					
None	45 (63.4)	10 (58.8)	35 (64.8)	$\chi^2(2)=1.00$	.61
One	15 (21.1)	5 (29.4)	10 (18.5)	-	-
Two or more	11 (15.5)	2 (11.8)	9 (16.7)	-	-

^aIncludes hostels, shelters and refuges.

^bIncludes other AoD and mental health treatment.

^cArrest data for one Evaluation participant not followed up who had also been involved in criminal activity in the last 3 months before TC intake was missing from the OH NSW client database.

Table 20. *Descriptive statistics for the employment, study and accommodation SES outcomes of the Follow-up sample.*

	T1: Entry (n=33)	T2: Exit (n=32)	T3: 3 months (n=23)	T4: 6 months (n=12)	T5: 12 months (n=7)
Main income source, n (%)					
Temporary benefit	27 (81.8)	23 (71.9)	14 (60.9)	7 (58.3)	2 (28.6)
Pension	3 (9.1)	4 (12.5)	4 (17.4)	2 (16.7)	3 (42.9)
Full-time employment	2 (6.1)	1 (3.1)	3 (13.0)	1 (8.3)	2 (28.6)
Part-time employment	0 (0.0)	0 (0.0)	0 (0.0)	1 (8.3)	0 (0.0)
Casual employment	0 (0.0)	3 (9.4)	0 (0.0)	0 (0.0)	0 (0.0)
Self-employed	0 (0.0)	1 (3.1)	0 (0.0)	0 (0.0)	0 (0.0)
Dependant on others	0 (0.0)	0 (0.0)	1 (4.4)	1 (8.3)	0 (0.0)
No income	1 (3.0)	0 (0.0)	1 (4.4)	0 (0.0)	0 (0.0)
Currently studying? n (%)					
	NA	3 (9.4)	6 (26.1)	3 (25.0)	1 (14.3)
Usually live in a..., n (%)					
Private house or flat	11 (33.3)	10 (31.3)	7 (30.4)	3 (25.0)	3 (42.9)
Rented house or flat	16 (48.5)	16 (50.0)	12 (52.2)	5 (41.7)	1 (14.3)
Prison/detention centre	2 (6.1)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
No usual residence	0 (0.0)	1 (3.1)	1 (4.4)	0 (0.0)	0 (0.0)
Supported accommodation ^a	3 (9.1)	2 (6.3)	0 (0.0)	1 (8.3)	1 (14.3)
Other treatment facility ^b	1 (3.0)	1 (3.1)	0 (0.0)	0 (0.0)	0 (0.0)
Boarding house	0 (0.0)	2 (6.3)	3 (13.0)	3 (25.0)	2 (28.6)
Usually live with? n (%)					
Alone	6 (18.2)	8 (25.0)	6 (26.1)	5 (41.7)	2 (28.6)
With family	11 (33.3)	16 (50.0)	8 (34.8)	3 (25.0)	2 (28.6)
<i>Parents</i>	9 (27.3)	11 (35.4)	5 (21.7)	3 (25.0)	2 (28.6)
<i>Other relatives</i>	2 (6.1)	5 (15.6)	3 (13.0)	0 (0.0)	0 (0.0)
With partner/children	6 (18.2)	3 (9.4)	4 (17.4)	1 (8.3)	1 (14.3)
<i>Partner only</i>	1 (3.0)	1 (3.1)	2 (8.7)	0 (0.0)	0 (0.0)
<i>Child(ern) only</i>	2 (6.1)	1 (3.1)	1 (4.4)	0 (0.0)	1 (14.3)
<i>Partner and child(ern)</i>	3 (9.1)	1 (3.1)	1 (4.4)	1 (8.3)	0 (0.0)
In custody	2 (6.1)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Residents/housemates	4 (12.1)	4 (12.5)	5 (21.7)	3 (25.0)	2 (28.6)
Friends	4 (12.1)	1 (3.1)	0 (0.0)	0 (0.0)	0 (0.0)

^aIncludes hostels, shelters and refuges.

^bIncludes other AoD and mental health treatment.

At each follow up time-point, participants were asked if they were currently undertaking any form of tertiary-level study. Approximately 9% were studying at the time of the exit interview, while over 25% were studying when interviewed 3 months after program exit. At the 6-month interview, three individuals from the Follow-up sample were currently studying, while at the 12-month one participant was still undertaking study. In relation to

accommodation, no Follow-up participants were living in boarding or share houses at baseline, however at the exit, 3-month, 6-month and 12-month follow up interviews at least 2 participants disclosed living in this form of accommodation. In line with this result, at each follow up time-point between 2 and 5 participants disclosed that they lived with housemates or other residents. Regarding criminal activity, very few participants disclosed being involved in criminal activity during the exit ($n=1$, 3.1%), 3-month ($n=1$, 4.3%), 6-month ($n=0$, 0.0%), and 12-month ($n=1$, 14.3%) follow up interviews (Table 19). None of these individuals had been arrested except one, who, during their 12-month follow up interview, reported that they had been arrested once.

3.1.6.2 Social functioning. The average OTI-SF score for the Evaluation sample was 22.9 ($SD=7.7$). Baseline OTI-SF scores were similar between participants from the Follow-up sample ($M=21.3$, $SD=7.0$) and those not followed up ($M=23.5$, $SD=7.9$; Mann-Whitney U-Test, $U = 1196$, $p = .29$). The linear ME model for OTI-SF scores showed there was a significant main effect of Time, $F(4, 73)=6.46$, $p<.001$ (Figure 11). Compared to OTI-SF scores at intake, there was a significant improvement in social functioning at TC exit ($ps = .002$). Like EUROHIS-QoL8 scores, this improvement was maintained 3 months, 6 months and 12 months after program exit (all $ps >.25$).

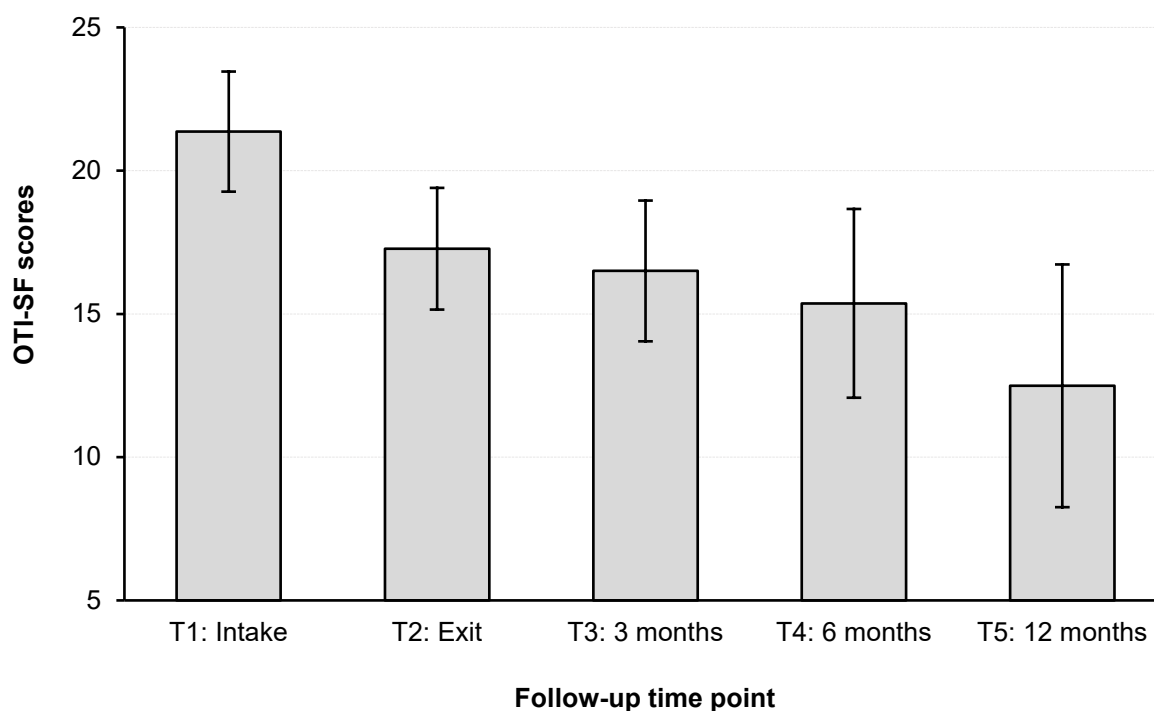


Figure 11. Estimated marginal mean OTI-SF scores for the Follow-up sample, categorised by time point. Vertical bars represent 95% confidence intervals. Lower OTI-SF scores indicate better social functioning.

3.2 Section 2 - Progress During the Program – The Transition Project

Although monitoring progress once the participant had separated from the residential rehabilitation program was the major aim of the present Evaluation Project, client progress during the treatment program itself is also an important area of investigation. This is particularly important considering that on average, TC programs in Australia take nine to 12 months to complete (Australasian Therapeutic Communities Association, 2010), and there is inconsistent evidence regarding the optimal length of stay in a TC to produce clinically significant change in psychological functioning, quality of life and substance dependence (Malivert et al., 2012).

Some researchers report longer durations, in the region of 12 months or more, are associated with larger improvements in mental health and dependence (De Leon, 2010; Moos, Moos and Andrassy, 1999), whereas others suggest optimal outcomes are achieved at nine months and decline after 12 months (Wexler et al., 1990). Other authors argue there are no differences between 12-months and abbreviated programs of 6 months or less (McCusker et al., 1997; Nemes et al., 1999; Simpson and Sells, 1983). While there is conflicting evidence regarding time in treatment, Toumbourou et al. (1998) argue level completion is a better predictor of outcomes which aligns with the hierarchical structure of TC programs. All of these questions have impact on service delivery, and are therefore of importance to OH NSW.

3.2.1 Research Questions

The Transition Project therefore aimed to answer the following research questions:

1. Do outcomes statistically significantly change between pre-treatment and each level of treatment? Is this change also clinically significant?
2. Do outcomes, on average, statistically significantly change between levels of treatment?
3. Is there a relationship between time in treatment and outcomes on separation from the program?

3.2.2 Method

3.2.2.1 Participants

The sample was derived from the same 117 adults with problematic substance use who comprised the sample for the Evaluation Project. However, there were 21 participants who did not progress past the pre-treatment level, and they were therefore excluded from the final

sample as no treatment data was collected. The final sample ($n=96$) therefore consisted of mostly males (66%) with ages ranging from 18 to 63 ($M=33$, $SD=9$). The majority were born in Australia (84%), over half reported a criminal history (58%) and all identified English as their primary language. For most participants it was their first admission to Odyssey House NSW (87%) and they were most commonly self-referred (31%) followed by referral from friends and family (17%), or other community and residential services (17%).

Table 21. *Participants' Highest Level of Education and Self-Reported Psychiatric Diagnoses*

Demographic Characteristic	Percentage of Participants ($n=96$)
Highest Education Level	
High school Year 10 or Before	42.7%
Higher School Certificate (Year 12)	11.5%
TAFE	36.5%
University	9.4%
Psychiatric Diagnosis	
Depression	39.6%
Anxiety	24.0%
Bipolar	6.3%
Psychosis	7.3%
Other	11.5%
None	47.9%

Note. For psychiatric diagnoses, total percentage exceeds 100 as some participants had more than one diagnosis.

3.2.2.2 Measures and Materials

Following the recommendations outlined in the Network of Alcohol and Other Drug Agencies (NADA) program evaluation guidelines (NADA, 2016), the same measures were used in the Transition Project as were used for the Evaluation Project. These include the Severity of Dependence Scale (SDS), the Timeline Follow-Back Method (TLFB), the Kessler 10 Psychological Distress Scale (K-10), and the 8-item European Health Interview Survey Quality of Life Index (EUROHIS-8). As these measures were all described in the Evaluation Project outline (see Table 3), their psychometric properties and categories of use will not be reported again. However, for the Transition Project, the K-10 was scored according to

severity of distress (rather than risk of having a significant mental illness), with scores in the range 0 to 19 indicating normal mood, 20 to 24 indicating mild distress, 25 to 29 indicating moderate distress and 30 or above indicating severe distress (Oakley et al., 2010).

3.2.2.3 Procedure

Residents who provided informed written consent to participate in the data collection process were monitored on a weekly basis for transitions between the treatment levels. On a given week where a resident transitioned from one level to the next, or separated from the program, the number of days that had passed since that resident entered the program was calculated. That way, time in treatment information was analysed alongside the level transition information. Participants completed the same measures at each transition level as they completed for the Evaluation Project. Any participants who exited the program for more than one week and then returned were classed 're-entries' ($n=7$) and data collection was discontinued following their return.

3.2.3 Results

While 96 participants entered Level 1, 84% had separated from the program by Level 4, which is a common occurrence in substance use treatment populations (Darke et al., 2012). The number of participants who remained in treatment at each level is displayed in Table 22.

Table 22. *Number of Participants with Missing Values and In Treatment at Each Level.*

	Level 1	Level 2	Level 3	Level 4
Retained in treatment	96	63	32	15
Missing data	13	17	10	0

Descriptive analysis of the TLFB indicated 100% of participants whose data was collected remained abstinent from all substances except tobacco during treatment. Thus, only Tobacco on the TLFB was included in final analysis.

Preliminary analysis indicated the assumption of normality was violated for all outcome variables; however, inspection of QQ-Plots indicated standardized residuals were reasonably normally distributed for the SDS and EUROHIS-QoL. This was not consistent for TLFB Tobacco. Visual inspection of the K10 data also indicated the assumption of proportional odds was met. Nevertheless, non-parametric analyses were employed as they were less reliant on assumptions of normality, and more robust against unbalanced designs and missing data (Homish et al., 2010). Specifically, for analysis of TLFB Tobacco, Generalized Estimating Equations were used as they did not require normally distributed standardized residuals (Liang and Zeger, 1986). Analyses and interpretations were in line with recommendations from Garson (2013).

3.2.3.1 Research Question 1

A series of Generalized Estimating Equations (GEEs) were conducted to investigate the probability of psychological distress, quality of life, substance dependence and tobacco use, being correlated with change at each level of treatment when compared to pre-treatment. GEEs are an extension of Generalized Linear Models for correlated non-independent data such as repeated-measures and time series. They estimate population average effects to determine the probability of correlations between dependent and independent variables (Garson, 2013). An Exchangeable correlation structure was used for these analyses as it displayed the smallest QIC. Data was assumed to be missing completely at random.

An Ordinal Logistic GEE revealed each treatment level ($p < .001$) was significantly related to improvement in psychological distress in comparison to pre-treatment as displayed in Figure 2. The population odds of being in a higher category of psychological distress during Level 1, 2, 3 and 4 was respectively .34, .13, .067 and .048 times less likely than when compared to pretreatment.

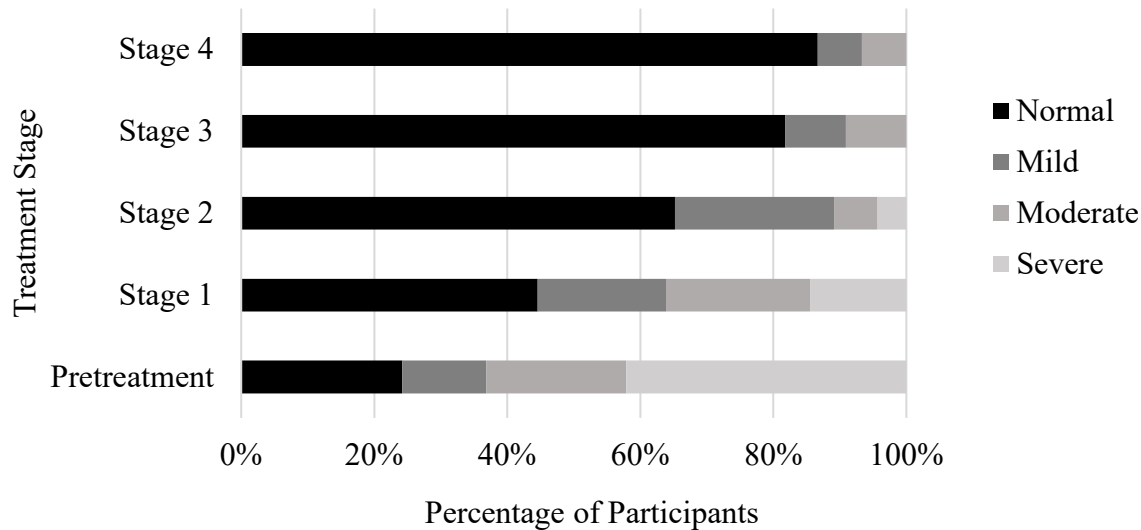


Figure 12. The cumulative percentage of participants per Level in each category of the K10.

A series of Linear GEEs revealed each level was significantly ($p < .001$) associated with a high probability of change in quality of life compared to pre-treatment. Estimated marginal means indicated quality of life improves when comparing each level to pre-treatment as displayed in Figure 13. These changes in each level were further found to be clinically significant when employing a two standard deviation solution with a cut off score of 25.9, calculated using marginal estimated means (Jacobson & Truax, 1992).

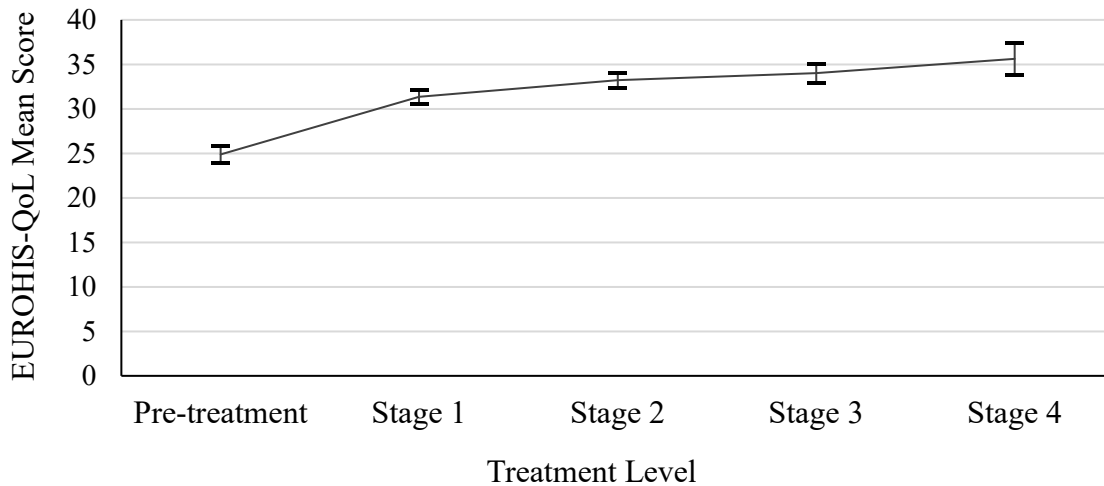


Figure 13. Estimated Marginal Means with Confidence Intervals for Quality Life at Each Level of Treatment.

Each level was also significantly (Level 1 $p=.026$; Level 2-4 $p<.001$) associated with a high probability of change in substance dependence when compared to pre-treatment. Estimated marginal means indicated substance dependence decreased when comparing each level to pre-treatment as displayed in Figure 14. Changes in each level were also found to be clinically significant when employing a two standard deviation solution with a cut off score of 8.15, calculated using marginal estimated means (Jacobson & Truax, 1992).

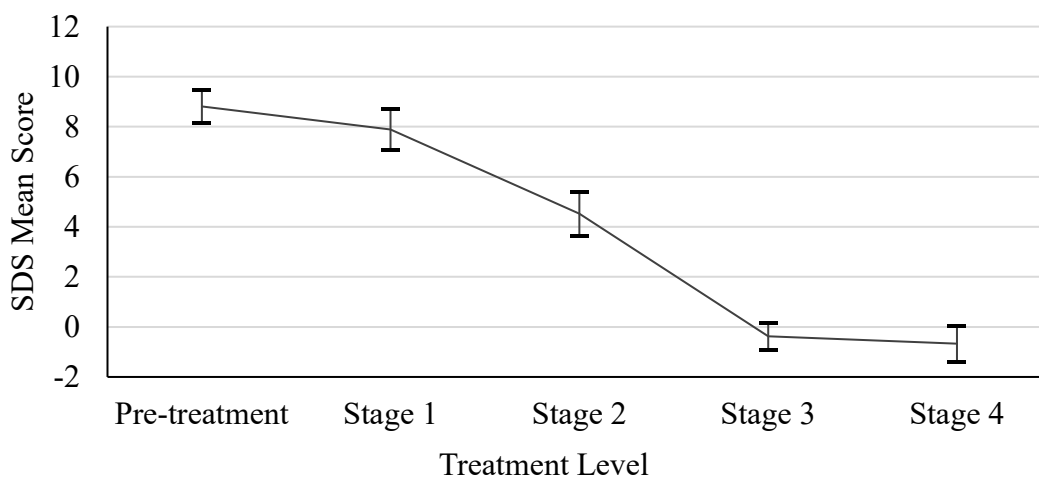


Figure 14. Estimated Marginal Means with Confidence Intervals for Substance Dependence at Each Level of Treatment.

In relation to Tobacco Use, Level 1 ($p=.005$) and Level 2 ($p=.025$) were significantly associated with a high probability of change when compared to pre-treatment. Other levels were non-significant. Estimated Marginal Means displayed in Figure 15 indicated the number of days participants smoked tobacco increased in earlier levels before returning to a similar pre-treatment frequency. Changes in Level 1 and 2 were found to be clinically significant when employing a two standard deviation solution with a cut off score of 22.11, calculated using marginal estimated means (Jacobson & Truax, 1992).

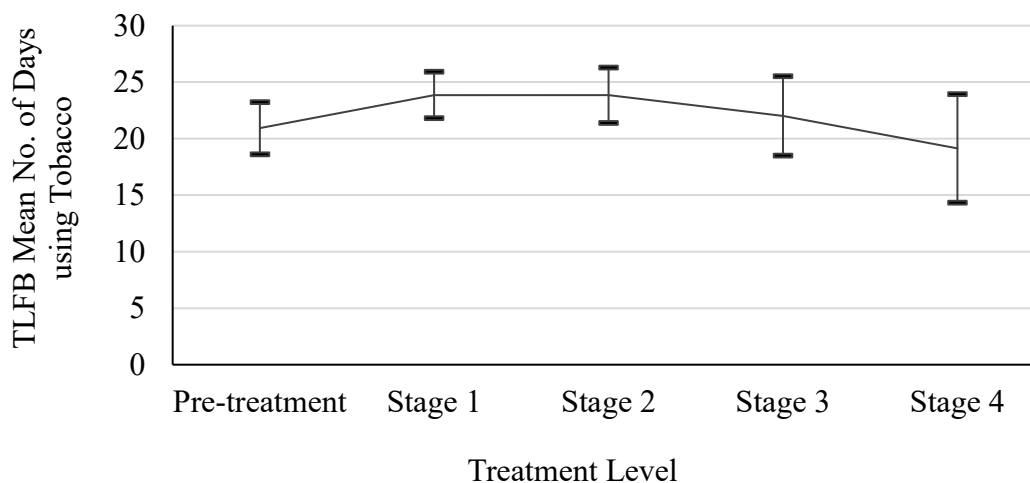


Figure 15. Estimated Marginal Means with Confidence Intervals for Frequency of Tobacco Use at Each Level of Treatment.

3.2.3.2 Research Question 2

Mixed Model Contrasts using Repeated Coding were computed to compare if psychological distress, quality of life, substance dependence and frequency of tobacco use changed between levels of treatment. On average, participant's level of psychological distress ($p=.002$, $b=0.56$) and quality of life ($p=.004$, $b=-1.94$) significantly improved from Level 1 to 2. There was no significant difference from Level 2 to 3 or Level 3 to 4. Similarly, substance dependence on average significantly decreased from Level 1 to 2 ($p<.001$, $b=2.94$) and Level 2 to 3 ($p<.001$,

$b=4.68$), however there was no significant difference from Level 3 to 4. Frequency of tobacco use on average did not significantly change between levels.

3.2.3.3 Research Question 3

A series of Generalized Linear Models (GLZMs) were conducted to examine the relationship between time in treatment and outcomes of psychological distress, quality of life and substance dependence at program exit. GLZMs are a generalization of General Linear Models for dependent variables with non-normal distributions. They estimate model parameters to understand the associated relationship between a predictor variable and dependent variables (Garson, 2013). Data was assumed to be completely missing at random. Inspection of standardized residuals indicated the assumption of homoscedasticity was met for SDS and EUROHIS-QoL8. Length of stay in the program ranged from 35 to 774 days ($M=196$, $SD=146$), not including the eight participants who were still completing the program when data collection ceased. To maximise power, time in treatment was categorised into groups based on the threshold theory that significant changes in treatment occur in 90-day intervals (Simpson et al., 1999). The groups were 90 days or less, 91-180 days, 181-270 days, 271-365 days and more than 365 days.

An Ordinal Logistic GZLM indicated shorter durations in treatment significantly predicted psychological distress, specifically 90 days or less ($p=.018$), 91-180 days ($p=.041$) and 181-270 days ($p=.029$). The odds of being in a higher category of psychological distress when in the program for 90 days or less was 8.68 times more likely when compared to those in the program for 365 days or more. After 91-180 days, the odds were 5.43 and after 181-270 days the odds were 7.88 times more likely compared to 365 days or more.

A Linear GLZM also indicated 90 days of less ($\beta = -6.71$, $CI = -10.22 - -3.19$, $p < .001$) was significantly related to lower quality of life than 365 days or more in the program. No other time categories were significantly related to changes in quality of life. The estimated marginal means are displayed in Figure 16.

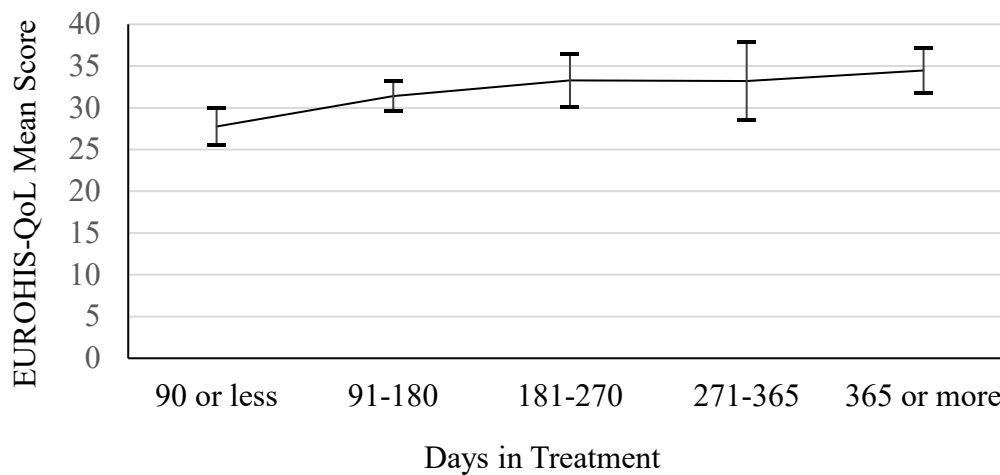


Figure 16. Estimated Marginal Means with Confidence Intervals for Quality of Life at time of exit from the OH NSW Program.

A Linear GLZM revealed 90 days of less ($\beta = 7.37$, $CI = 5.47 - 9.28$, $p < .001$), 91-180 days ($\beta = 5.48$, $CI = 3.72 - 7.246$, $p < .001$) and 181-270 days ($\beta = 3.18$, $CI = 5.39 - 8.01$, $p = .005$) in the program was related to significantly greater substance dependence than 365 days or more. The estimated marginal means are displayed in Figure 17.

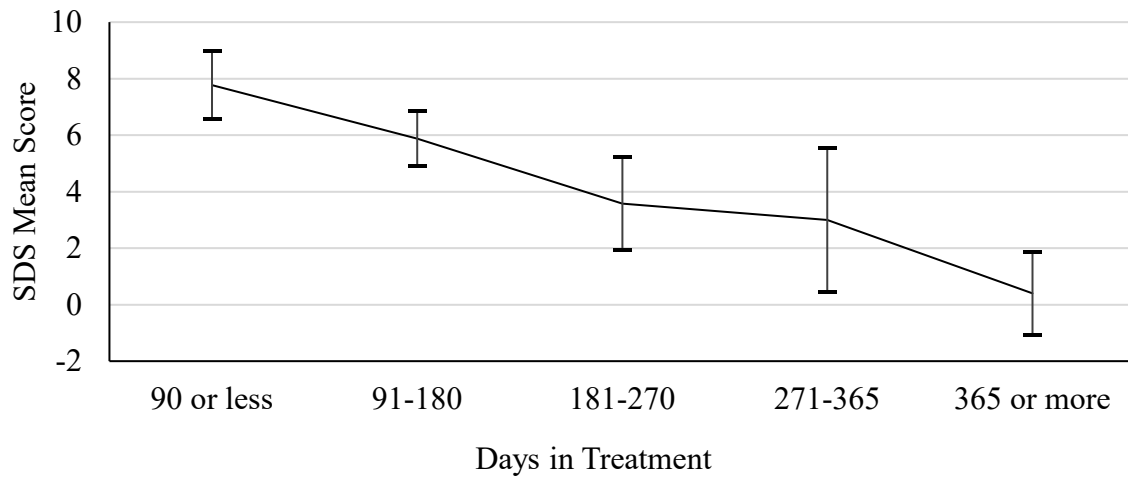


Figure 17. Estimated Marginal Means with Confidence Intervals for Substance Dependence at time of exit from the OH NSW Program.

3.3 Section 3 – Perceptions of the Program – The Qualitative Project

Qualitative feedback was collected following program separation and at 3-month, 6-month and 12-month follow-up interviews. In the interviews, participants were asked to describe, in their own words, the reason for their separation from the program, and to identify which aspects of the program they found the most and least helpful. Participants who separated before completing Level 2 were also asked to indicate what may have prolonged their stay with the residential program. Participants who completed Level 2 were asked to imagine what advice they would give to someone about to enter the residential program. All participants were additionally asked the same qualitative feedback questions during the 3-month, 6-month and 12-month follow-up interviews. In these questions the participant was asked to reflect on what they had learned from the program and whether their time in treatment had changed their lives, as well as any further suggestions for changes to the OH NSW program and whether they would recommend the program to other people.

In total, 58 of the original 117 Evaluation participants were contacted following their separation from the program, however only those from the Follow-up sample provided detailed qualitative feedback on their treatment experiences with OH NSW (n=33, also see Figure 1). The qualitative sections of the exit, 3-month, 6-month and 12-month interviews each included four questions as described above, and data for each interview were collected in a semi-structured format. This gave participants some direction as to the type of feedback requested while allowing each individual to expand on the details they saw as important in relation to the role of OH NSW in their recovery journey. The qualitative feedback was subjected to content and thematic analysis by the same two research psychologists who conducted all follow-up interviews (RM, TNJ). Of the 58 participants contacted, 14 chose to opt-out of the Evaluation research. None of the 14 participants withdrew consent for the use

of their baseline data for research purposes; instead, each individual felt they were unable to continue being a part of the Evaluation. Eleven participants agreed to continue their involvement with the Evaluation research but did not complete any follow-up interviews. For the latter individuals, an average of three contact attempts was made before ceasing further communication. Consent was also re-established during each successful contact attempt.

3.3.1 The Separation Interviews

Thirty-two former clients relayed their perspective of why they had left the OH NSW TC, as well as the most and least helpful parts of the program.

Question: What was the main reason you left the residential program?

Participants mentioned a mixture of internally- and externally-driven factors that lead to their separation from the OH NSW residential program (Figure 18). The most common external factor cited for leaving was to support family living outside of the program (n=9). As defined by one participant, “...I need[ed] to be there for my family.”

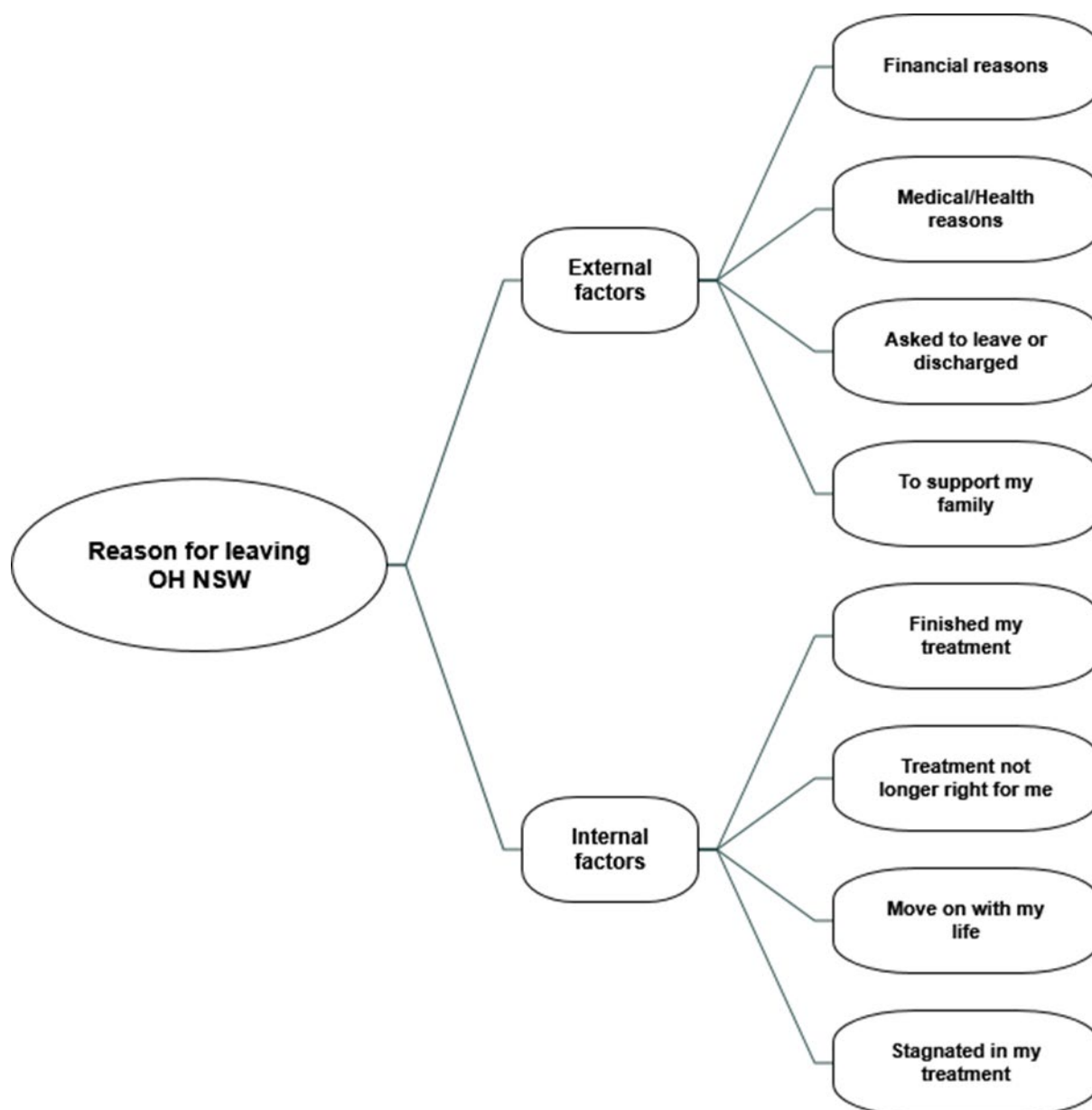


Figure 18. Coding tree of reasons provided for leaving the OH NSW residential program during the exit interview ($n=32$).

Other external factors mentioned included being asked to leave/being discharged from the program ($n=7$), financial difficulties ($n=3$), and medical or health issues ($n=2$). Regarding internal factors, the most cited reason involved the OH NSW treatment approach no longer suiting the individual ($n=8$). Other internal factors included the individual feeling they were ready to move on with their lives ($n=4$), that they had stagnated in their treatment ($n=4$), or

that they had finished treatment (n=4). As summarised by one participant, “...*I felt I was stagnating. In a nutshell. I felt like I was ready to move on with my life.*”

Question: Which parts of the residential program did you find the most helpful? Why?

Participants found the most helpful parts of the OH NSW program involved the overall structure of the TC and the therapeutic treatment provided to them while in the program (Figure 19). In terms of the TC structure, maintaining a routine and schedule was linked with feeling safe and secure, having access to basic amenities (e.g., food, hygiene), and contributing to the running of the TC. One participant expressed this in the following way:

“...during addiction, you lose structure and discipline. [The OH NSW program] allows you to relearn life skills.”

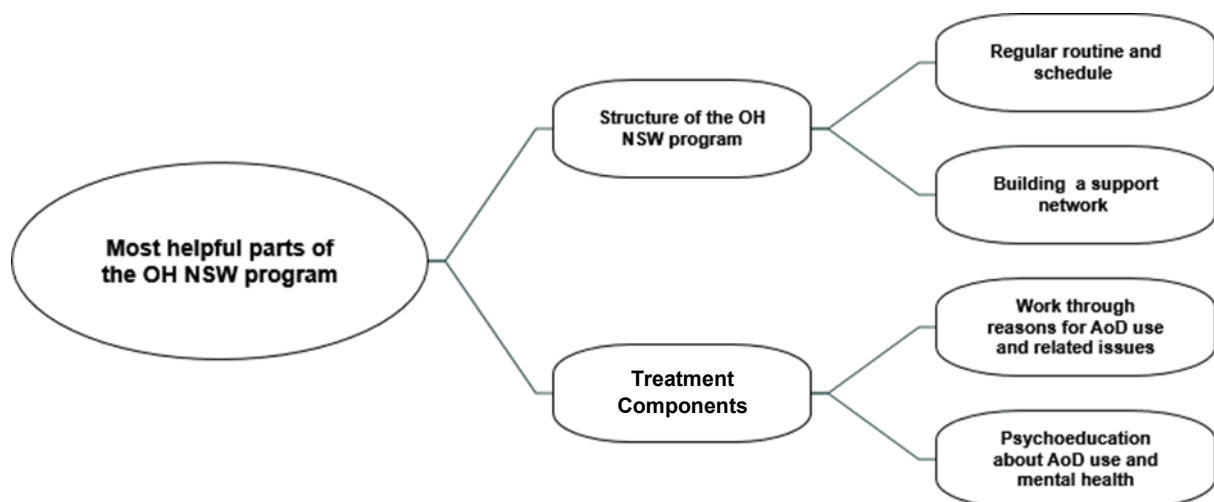


Figure 19. Coding tree of most helpful aspects of the OH NSW residential program (n=32).

Another aspect of maintaining a routine and schedule highlighted by participants was the structural features of the OH NSW program itself, such as consequences, encounters, the OH NSW values, the therapy groups and treatment milestones (e.g., the Assessment). As

described by one participant, “(I benefitted from)...*all of it, I learned from everything, especially the consequences, group therapy and the schedule.*”

Another important part of the TC structure mentioned by several participants was the capacity to build a support network through interactions with staff, other OH NSW residents and their peer group (Figure 19). As defined by one participant, “... *[the] general support was good, mainly the peer group. They were there for me in recovery, encouraged me to live my life better.*” Regarding therapeutic treatment, several participants emphasised that the counselling, group therapy and one-on-one sessions with therapists contributed to their being able to work through the reasons for their AoD use and related issues (e.g., “*Therapy, it gave me insight in my issues.*”). Increased knowledge about problematic AoD use and mental health, in general, was also connected with therapeutic treatment by some participants (e.g., “*[The] Mental Health program and teachings at Odyssey House. [They] taught me how to manage my conditions.*”).

Question: Which parts of the residential program did you find the least helpful? Why?

Some participants reported that they found nothing unhelpful about the OH NSW program (n=8, Figure 20). However, several disclosed experiencing difficulties with the TC structure and feeling a lack of support during their time in residence with OH NSW.

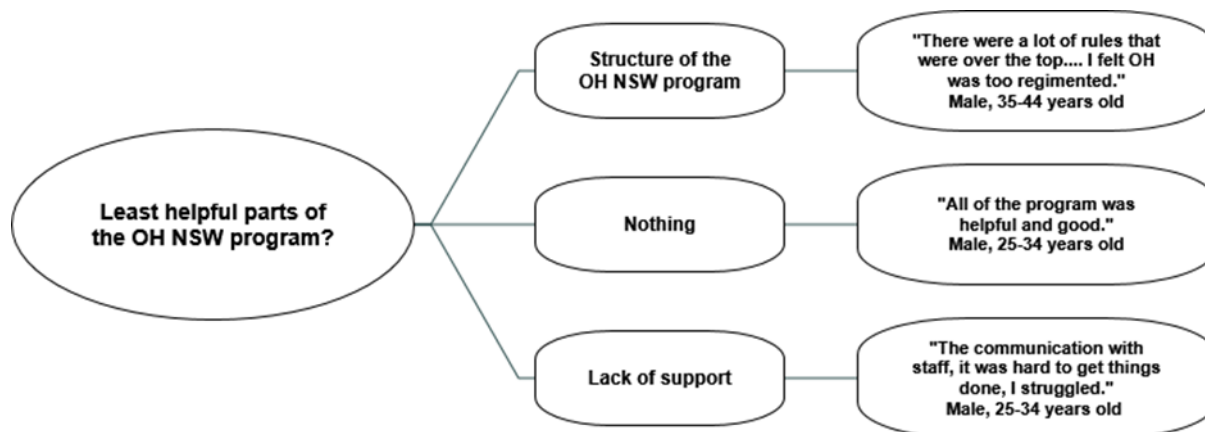


Figure 20. Coding tree of the least helpful aspects of the OH NSW residential program ($n=32$). Sample quotes for each of the three themes are also included.

While many parts of the TC structure were praised in the previous feedback question, other aspects were criticised. The common themes linking these criticisms were the individuals feeling the treatment they received was not helpful, or that some in. As expressed by one participant, “...I can already express myself, so (the) encounters (were) not helpful. Why would I do all this work for nothing, when I can work the same hours outside and provide a home for my children?”. In another example, one participant disclosed that “...it's like some procedures are in place to annoy you. (The) purpose of some procedures (is) unclear or unhelpful.” Other examples included difficulties accessing medical treatment, a lack of transparency about the handling of the individual’s finances, or being assigned to groups or PCL classes that were irrelevant or not suited to the individual (e.g., “The Parents group wasn't helpful...I have teenage kids so many of the topics didn't relate to me.”).

The lack of support experienced by several participants was often linked to their frustrations with the TC structure (Figure 20). Some believed the TC structure was too restrictive and similar to a prison-like environment (e.g., “There were lots of stupid little rules, some were meaningful but others weren't.”). Concerns were also raised about there not being enough

time for treatment, delays in receiving feedback through the structure line and there not being enough help available for peers in need. For instance, one participant noted that “...*I used to help out my roommate as they didn't know how to make a bed. If someone is inexperienced with day-to-day habits they need support, not punishment*”. Participants also connected feeling a lack of support by OH NSW to specific individuals within the program. For example, one participant believed that “...*opinions differed between people, (there was) no loyalty, (so you) couldn't trust how your opinion would be taken.*”

3.3.2 Early separation from treatment.

Participants who left the residential program before Level 3 were classed as “early separators” from treatment (n=25, 75.8%), and were asked what could have been done differently for them to remain with the program. This group included six individuals who left the program before Assessment (18.2%), eight individuals who completed Assessment (24.2%) and 11 individuals who completed Level 1 (33.3%).

Question: What could have been done differently for you to have continued your stay with the residential program?

Several participants classed as “early separators” did not believe there was anything that needed to be changed about the residential program (Figure 21). Their responses generally praised the program, and they either clarified that the reason for leaving the program was unrelated to OH NSW, or acknowledged that the program wasn’t suitable for them personally [e.g., “(The program) was wonderful, the reason I left was my own issue.”]. Other participants made suggestions as to how to improve the retention of clients in the program based on their own experiences (Figure 21). The three themes generated in relation to these suggestions were streamlining the procedures within the TC, ensuring the treatment was

tailored to the needs of the individual, and increasing the amount of therapy received in the early levels of treatment. Regarding the TC procedures, being able to remain in contact with family outside of the program was highlighted. For instance, one participant disclosed “...if it was easier to stay in contact with family, I would have stayed in the program”.

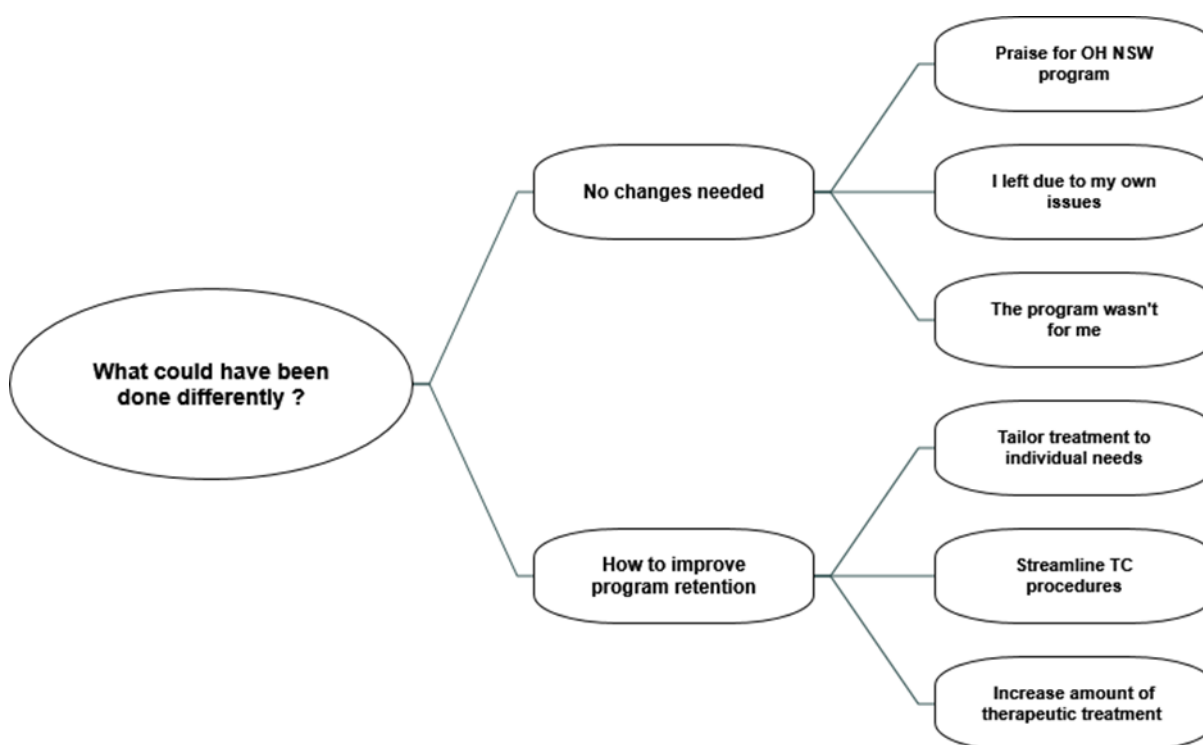


Figure 21. Coding tree of suggestions for improving retention in the OH NSW residential program; exit interview ($n=25$).

Other suggestions included ensuring staff treat residents in a consistent manner, informing potential residents of the at-times confrontational style of the TC, and a greater consideration of the resident's vulnerabilities or emotional difficulties during treatment.

3.3.3 Treatment completers.

Participants who separated from the program after entering Level 3 ($n=8$, 24.2%) were considered treatment completers, and they were asked what advice they would give someone

about to enter the residential program. The participant who missed the exit interview was from this grouping.

Question: What would be your advice for someone just about to enter the residential program? In other words, what would have helped you to know about the program before you started?

All treatment completers agreed that being at OH NSW was challenging but worthwhile, and encouraged new clients to trust in the program. One participant summarised this as follows: "... (the program) is hard but worth it. Just give in, don't fight it, it is the best thing I have ever done." In another example, one participant said that "...the best advice I can give, (is to) open your eyes and arms, take it on, and trust in the program."

3.3.4 The Follow-Up Interviews

Twenty-three participants were interviewed again and provided qualitative feedback at three, six or 12 months after their separation from the residential program. Participants were asked the four same questions during each interview to track any changes in their responses over time. Eight participants completed all four follow-up interviews, while one participant missed their 6-month interview. Seven participants were lost to follow-up after the 3-month interview, while a further two participants were lost to follow-up after their 6-month interview.

Question: Thinking about the 3, 6 or 12 months since you left, what have been the most important things you learned or gained from the OH NSW program?

Three core themes emerged in the participants' responses to what they had learned or gained from the residential program: abstaining from AoD use, applying their new-found knowledge

about AoD use in their everyday lives, and improving their capacity for self-expression (Figure 22). Three months after leaving the program, participants were focused on remaining abstinent and employing the coping strategies they had learned while in the OH NSW program. As described by one participant, coping *involves “...setting short term goals and actioning those goals, not being hard on myself, (and) knowing that every day is another day of sobriety.”* Several participants also emphasised that continuing the personal development that they had started while in the program was important to them. Examples include learning how to be themselves, practising self-compassion, and actively engaging in self-reflection. As defined by one participant, *“...you don't need drugs to function. I'm more open and honest about things because this helps me not to slide and get worse.”*

By six months, attention had shifted to long-term strategies for abstinence (e.g., *“OH NSW taught me how to stay safe, (and) stay abstinent”*; Figure 22). At 12 months, participants were more likely to connect abstinence to persevering with their treatment and maintaining a routine in their everyday lives. As described by one participant, *“...the structure of the program was the main thing. I've never had stability in my life before OH NSW.”*

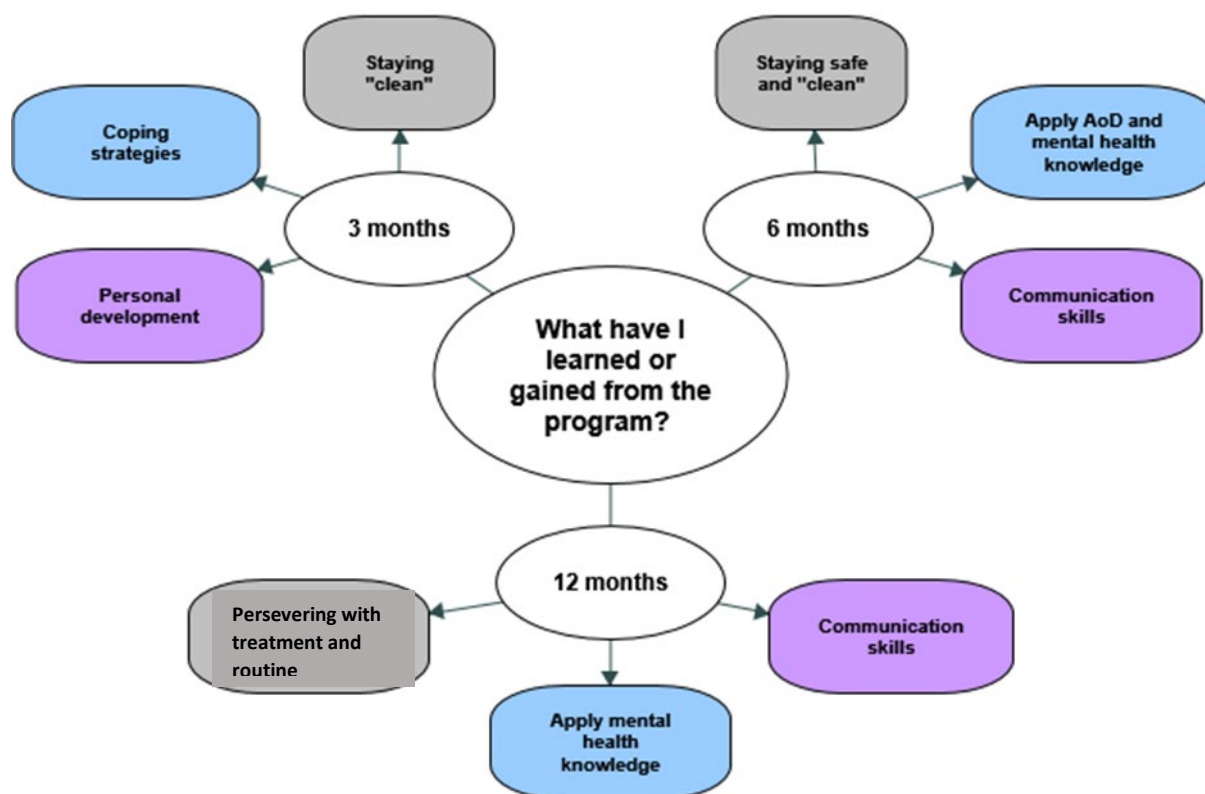


Figure 22. Coding tree of themes regarding what participants learned or gained from the program at three ($n=23$), six ($n=13$) or 12 ($n=9$) months after separation. Common themes across follow-up interviews were content related to abstaining or reducing AoD use (grey shapes), coping with AoD use and mental health issues (blue shapes), and improving one's self-expression (purple shapes).

By six and 12 months, the emphasis on personal development had shifted to the communication skills the individual had learned while in the OH NSW program. One 6-month participant connected this to being able to manage old friendships on a new basis e.g. “... *running into old mates who try to offer me drugs*”, while a 12-month participant expressed greater self-confidence, in being able to “... *(voice) my opinion and stick up for myself.*” The types of coping strategies mentioned by participants also changed between from the 3-month and later interviews. The 6-month and 12-month participants tended to emphasise the benefits of having knowledge about AoD use and mental health conditions to help them continue coping with their recovery. For instance, one 12-month participant

expressed “...(I) *liked how at OH NSW they didn't dwell on addiction, they worked on your headspace.*”

Question: What are you doing differently now compared to before you took part in the program? In other words, how has being a part of the program changed the way you live your life?

Participant responses to how their lives had changed after the program varied across the interview timepoints, however reduced drug use remained a core theme across the 12 month period.



Figure 23. Coding tree of responses regarding life differences post-program at three ($n=23$), six ($n=13$) or 12 ($n=9$) months after program exit. Responses related to abstaining from AoD use (grey shapes) was a common theme across each follow-up interview.

At each time-point, participants emphasised that the program had helped them abstain from or reduce their AoD use. Phrases used by participants to describe this included “sobriety”, “being sober”, “not using”, “staying clean”, “staying drug-free” and “stop using”. As described by one 6-month participant, “...OH NSW helped to enforce your clean time.” The range of content and themes covered in response to the life changes questions was more complicated in the 3-month interviews compared to the 6-month and 12-month interviews (Figure 23). Three months after leaving the program, participants believed they were living more of normal life and felt able to continue their treatment outside of the program. There was variation in how a normal life was defined by participants, and included instances such

as returning to paid employment, being more engaged in their life, following a structured daily routine, and becoming "*...more caring and responsible.*"

Similar to the first feedback question, three months after leaving the OH NSW program, participants emphasised that personal development was something they were doing differently in their lives (Figure 23). This theme was defined in several ways, such as trying to be a meaningful part of society, being more self-sufficient, and cutting ties with people in their lives before entering the TC. The latter involved participants being more selective about the people they chose to spend time with e.g., "*... (The program) helped me cut ties with people in my past and have the right people around*". Interestingly, this feedback question also elicited suggestions for how psychoeducation within the residential program could be improved (Figure 8). Examples included providing more detail on mindfulness, the impact of AoD use and recovery on the brain, and the issues that may underlie problematic AoD use.

During the 6-month interview, participants also tended to emphasise that the residential program led to positive changes in their lives and helped them prioritise their mental health. As noted by one 6-month participant, "*... (the program) helped me with perseverance and my mental health. OH NSW taught me to keep pushing through to the other side.*" The positive changes in the lives of some participants included the individual feeling happier, being able to keep to a routine, and being able to cope without using AoDs (e.g., "*I'm stronger... able to cope with life's challenges.*"). However, it must be noted that two 6-month participants did not report any change (positive or negative) to their lives as a result of taking part in the program. One of these individuals provided the same feedback 12 months after program exit, whereas the other did not.

Finally, during the 12-month interviews, some of the participants believed that relationships with other people in their lives had changed, especially in terms of their communication skills. One participant elaborated on this in the following way: *“I get along better with my friends and family. I’m at a place where I’m on the way to be able to have a life as normal people do...I couldn’t handle a lot of people before (the program), but now I can.”*

Question: If you were able to, would you change anything about the OH NSW program?

Two common themes emerged when participants were asked about whether they would change anything about the residential program (Figure 24). Of note, at each time-point, some participants did not believe the program needed to be changed, a finding which aligned with similar responses during the Exit interview. Participants also made suggestions about how to improve the TC structure during the 3-month, 6-month and 12-month interviews. Three months after program exit, suggestions included reconsidering the use of the Reflection Time level, relaxing some of the TC rules, and providing more education about how to live life outside of the program.

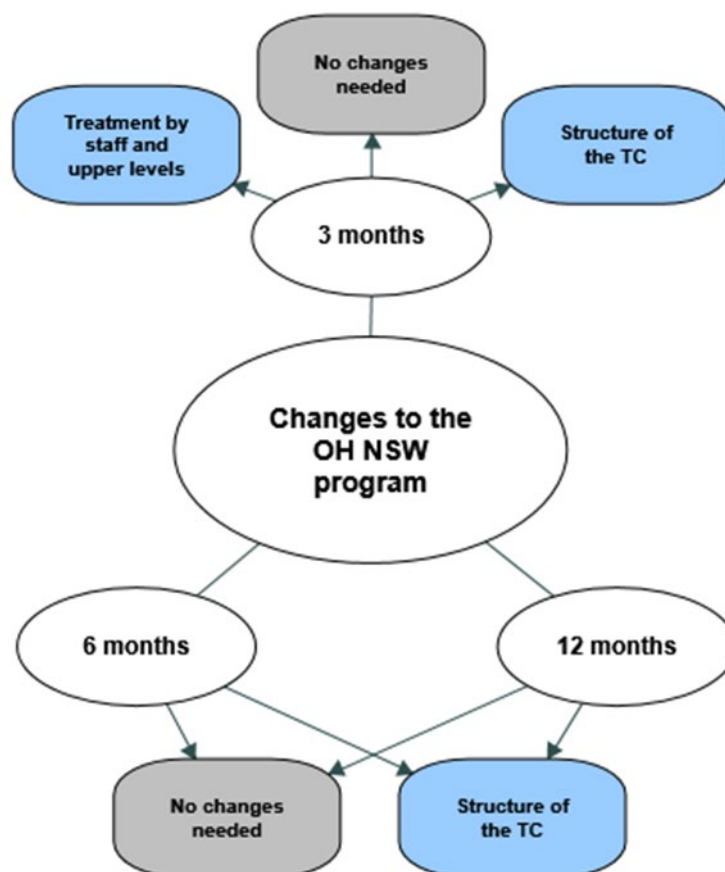


Figure 24. Coding tree of responses regarding suggested changes to the OH NSW program at three ($n=23$), six ($n=13$) or 12 ($n=9$) months after separation. Content related to the program not requiring any changes (grey shapes) and issues with the structure of the TC (blue shapes) were common themes across each follow-up interview.

With specific regards to the Reflection Time period, one participant disclosed that *“Although I consider myself antisocial, not being able to connect to people was a bit much.”* The same participant also raised concerns that individuals with problematic AoD use are already *“...shunned from society; they feel disconnected. So putting them in Reflection Time isn't good for their mental health.”* Another participant summarised their concerns about the strictness of the TC rules by saying *“...don't treat people like idiots. It's a rehab, not boot camp.”*

Another concern raised by some participants during the 3-month interview was the treatment of clients from lower TC levels by certain staff and upper-level residents (Figure 9). One

participant suggested that there was a “...*need to let go of the stigma and treat everyone equally.*” During the 6-month interview, the treatment of lower-level clients was again raised but in relation to the TC structure. The criticisms of staff and upper-level residents during the 3-month interviews were also clarified.

Select participants felt that for some upper-level residents “*the power went to their heads, especially if they had held power in prior [TC] positions.*” Suggestions for remedying this included more consistent monitoring of the OH NSW structure line and implementing regular performance reviews for the upper-level residents. Regarding OH NSW staff, the key issue seemed to be that some staff members were viewed as unsupportive by select participants. More generally, recommended changes to the TC program structure included providing more one-on-one therapy, more thorough pre-screening of client needs and relaxing TC rules that were considered arbitrary by select participants (e.g., clothing rules).

During the 6-month interview, various participants also raised issues related to specific components of the residential program. One participant highlighted that they felt clients with the PCP (i.e., Parents and Children Program) received harsher consequences than other residents. To remedy this, the participant suggested that the PCP staff “... *let the therapy team and upper structure be more involved in the PCP. It is like the main house and PCP have separate ‘identities’.*” Other participants suggested adding more education about mindfulness, as well as more content related to the treating of gambling to the program, in addition to providing more support to “early separators” from treatment outside of the program. Two 12-month suggested allowing better access to music would be a cost-effective way to ease stress while on the program (e.g., “*I have high anxiety and music helps me relax.*”).

4. DISCUSSION

There were three aspects to this first-time evaluation of OH NSW residential rehabilitation service. There was an examination of clinical changes in key domain areas from intake to separation from the program, and then an assessment of how well those changes were maintained over the ensuing 12 months. Progress during the program was also assessed, to determine whether the movement through the treatment phases of the program corresponded with clinical changes as reported by the residents. Finally, there was an interview-based investigation of resident experiences of the program, both in terms of perceived benefits but also areas of suggested change or alteration for the next generation of residents.

4.1 Key findings

The key findings of this investigation are firstly that individuals entering the OH NSW TC have already experienced significant disadvantage. On average, their level of educational attainment is relatively low, few are in employment, and many still live with their parents or other family members. More than half have been diagnosed with a mental health disorder. The majority list amphetamine-like stimulants as their primary drug of concern, but nearly 70% are polydrug users. 62% required withdrawal before they could enter the program.

Despite these concerning figures, the results of the residential rehabilitation program are consistently positive. By the time they leave the program, participants have made significant improvements in a range of areas including their substance dependence and problematic use of substances, mood, quality of life and social functioning. Moreover, they generally maintain those changes over the next 12 months. The one area that did not show improvement over time was tobacco use, which remained relatively constant despite the reduction in problematic drug use and improvements in mood, quality of life and social functioning.

There is clinical improvement at each level of program transition which supports the OH NSW method of determining readiness to move to the next treatment phase. Time-based analyses showed that those who separated in 90 days or less were significantly worse off on all domains than those who remained in treatment for the average of 167 days. Most of the treatments gains occurred within the first 270 days. Finally, qualitative feedback revealed that participants found the structure and routine of the TC both the most challenging aspect but also one of the most valuable elements of the program. There was a great deal of praise for the clinical skills and support provided by the OH residential rehabilitation team, and also some suggestions for how the program might be modified in order to better support retention.

OH NSW has over 40 years of experience delivering residential rehabilitation services. In 2016, OH received Commonwealth funding to establish community services. Early 2017 saw the first site of day programs which soon would cover the area of north, south, east and west Sydney with 10 sites.

The community services program is a very important link for Odyssey House's clients to benefit from a stepped care model. This model ensures when clients contact the Intake and Admission centre on our 1800 number, they can talk to an experienced clinician to be assessed for admission. They will be admitted to the withdrawal unit, through to the residential program or may be assessed to access the community services program. This integrated model allows clients to step through from residential to community services – a pathway which is especially important considering the high rates of early separation from residential rehabilitation identified in the Evaluation project. This is a pathway in line with the organisation's stepped care approach and is beneficial for the clients. When a client

leaves the residential program, whether at treatment completion or before their program has been completed, community services are available to provide after care services and support as a part of their transition back to the community.

4.2 Strengths and Limitations

This study has a number of strengths. Data collection was performed by an independent University researcher who was clearly identified as not being a member of the OH NSW service, thus decreasing the likelihood of participant demand characteristics influencing their responses. The use of a 12 month follow up period is relatively uncommon in TC research (Smith et al., 2006), and provides greater confidence in the clinical value of the intervention. The study also employed a range of relatively sophisticated statistical techniques in order to control for the non-normal distribution of data as well as the large number of missing values that were observed over time.

The major limitation of this study is the attrition from the sample. From the 117 individuals who consented to participate in the Evaluation Project, we were able to obtain follow up data from just 32 and this number decreased to 19 individuals by 12 months post-program. Loss to follow up in AoD research is known to be notoriously high (Wagner, Acier & Dietlin, 2018) and we had a number of strategies in place to attenuate this. A closed Facebook page was created as a reminder and point of contact for participants once they had exited the program, we had flyers and business cards placed in all OH community service centres as prompts and reminders of the study, and we collected as many types of contact information as possible (mobile and landline numbers, email addresses, postal addresses) for all participants. We also intended to collect Next of Kin contact information for occasions when we were unable to make contact with a participant, however the University ethics committee did not approve us

obtaining that information (as consent had not been given by the Next of Kin to share their contact information with us). Thus, while we carried out a comprehensive set of comparisons between those who separated early and those who completed treatment to determine whether these group differed in any significant respects (which in general terms they didn't), the representativeness of the data based on the high attrition rate remains an issue. A further study limitation is the lack of a control group, although this study was only ever intended to be a service evaluation, and ethical considerations would preclude the use of a no-treatment control group.

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