

Predictors of retention in “transitional” rehabilitation: dynamic versus static client variables

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Abstract

Purpose – Problematic substance use is associated with adverse outcomes that extend beyond the individual, resulting in significant cost to the community through health care, criminal justice and other psychosocial factors, including child protection and family support. These factors create concerns for treatment services, with an increasing demand for cost-effective solutions to this problem. This paper seeks to address these issues.

Design/methodology/approach – This prospective cohort study examined the effect of client variables on retention within a short-term (56 days) modified therapeutic community (MTC) in the Australian Capital Territory. A total of 28 residents (17 males, 11 females) took part in the study, which included quantitative and qualitative measures.

Findings – Results demonstrate a trend in favour of dynamic client variables as effective predictors of retention, with substance use severity being a significant predictor ($p = 0.023$, $d = 0.91$). Content analysis demonstrates that those with severe substance use have more intentions to engage in aftercare.

Originality/value – Short term treatments are seen as providing a gateway to further treatment, especially for chronic substance-using clients.

Keywords Aftercare, Motivation, Retention, Substance-related disorders, Therapeutic community, Substance misuse, Health care, Medical treatment

Paper type Research paper

Introduction

The use and abuse of alcohol and other drugs (AODs) occurs within a social, cultural and psychological context (Rickwood *et al.*, 2005), resulting in several adverse outcomes, including unemployment, homelessness and comorbidity with psychiatric conditions (Australian Bureau of Statistics, 2007). The cost to the community is substantial in terms of health care, criminal justice and other psychosocial factors, including child protection and family support, with the effect on families substantial.

Increasingly, governments are concerned with the establishment and development of cost-effective treatment options which address the changes in client presentations and drug availability. Effective treatments encompass approaches which not only consider the individual, but the wider context in which substance use occurs (Rickwood *et al.*, 2005). Therapeutic communities (TCs) offer one such approach to treatment, with particular applicability to populations with entrenched substance-using behaviours and mental health comorbidity (De Leon, 2000).

Although TCs have wide variation, there are some essential elements that comprise the TC approach, making them adaptable to the needs of specific target groups (De Leon, 2000). “Modified therapeutic communities” (MTCs; De Leon, 1997) are TCs which have been developed to meet these needs. As the population of substance users increases in diversity, treatment adaptations occur in response to demand and other external factors, such as funding requirements (Hubbard *et al.*, 1997), illustrated in a growing emphasis on

evidence-based interventions, resulting in review of treatment practices (Aron and Daily, 1974; Lloyd and O'Callaghan, 2001; Moos, 1998) and development of new responses.

In the Australasian context, MTCs serve a variety of populations, including families and single parents with children, young people, clients with comorbid mental health presentations and correctional populations. Increasingly, other TC models, including short-term (eight to 16 weeks) and day programs (which meet for several hours three to five days a week) are being established. A number of MTCs also include detoxification beds, which supports a throughcare approach to treatment and facilitates the person's entry into rehabilitation. The MTC, which is the subject of this study, includes this facility.

Randomised control trials have not been generally applied to research in this area. However, there is extensive literature demonstrating the effectiveness of TC treatment approaches utilising outcome studies. This research has been reviewed by many authors (Addazi *et al.*, 2009; Anglin and Hser, 1990; Hubbard *et al.*, 1997; Prendergast *et al.*, 2002; Simpson and Sells, 1990; Smith *et al.*, 2006) and has identified a consistent, strong and positive relationship between treatment retention and follow-up treatment outcomes, such as abstinence (Hser *et al.*, 2004), employment (Hubbard *et al.*, 1997; Nuttbrock *et al.*, 1998; Pitts, 1991; Simpson and Sells, 1982; Teichman and Basha, 1996), reduced drug use and criminal behaviour (De Leon *et al.*, 1982; Prendergast *et al.*, 2002; Simpson *et al.*, 1997) over many years of TC research (Baekeland and Lundwall, 1975; De Leon and Shwartz, 1984; Prendergast *et al.*, 2002).

There are limited client characteristics that are significantly or consistently associated with retention (Condelli, 1994; De Leon, 1984; Simpson and Sells, 1982), an exception being client status prior to treatment. Research investigating the effectiveness of modified TCs has shown clients with severe psychopathology (Brunette *et al.*, 2004; De Leon *et al.*, 2000; Joe *et al.*, 1995; Mueser and Drake, 2000) or substance use severity (De Leon *et al.*, 1982; Tims and Ludford, 1984) remain in treatment longer. Specifically, psychopathology and severity of substance use are associated with retention and positive treatment outcomes when participants are matched in treatment programs designed to cater for their specific needs. Additionally, more integrated and supportive but less structured approaches prove successful for dually diagnosed populations (Brunette *et al.*, 2004; De Leon *et al.*, 2000; Mueser and Drake, 2000).

Dynamic variables, such as motivation and readiness (MR) for change, have been established as consistently good predictors of treatment retention (Condelli and De Leon, 1993; Condelli and Dunteman, 1993; De Leon *et al.*, 1994; Joe *et al.*, 1998). A retrospective cohort study by De Leon *et al.* (1994) found client circumstances, motivation, readiness and suitability for treatment significantly correlated with 30 day and longer term retention. Therefore, research indicates that dynamic variables such as MR are better predictors of retention than static, background or demographic variables, such as age, gender and drug of concern (DOC). Additionally, research investigating the effects of modified TCs suggests that clients who are matched to treatment modality experience better outcomes (Gossop *et al.*, 1999; Simpson, 1997).

Currently, AOD treatment providers are under pressure to meet the demands of cost-effective treatment. In this context, program length becomes a consideration. As current research has neglected the investigation of client variability on retention in short-term TC treatment programs, the current study examined the impact of client variables on treatment retention in a short-term MTC. In particular, this program provides "transitional" rehabilitation services utilising TC principles of community-as-method whereby individual change of attitudes, norms and behaviours are regulated via the community (De Leon, 2000). For instance, residents who have remained in the program longer are encouraged to support and mentor new residents. Due to program length, the program did not include specific "levels" though these are inferred via participants' length of stay and commitment to the program. Additionally, the program offers a variety of other AOD, as well as psychological, recreational and pharmacological interventions. Residents in treatment maintain the house and grounds in which the program stands, and undertake other work functions associated with the running of the MTC. "Transitional" is defined as a program

designed to provide a bridge between detoxification and longer term treatment, either within a residential setting or through aftercare within the community. As such, transitional programs provide the opportunity for introduction to rehabilitation within a supportive environment and allow the person to assess their longer term needs for referral.

In this setting, client variability and its relationship with treatment retention is explored. In this study, treatment retention is defined as treatment completion. It was hypothesised that dynamic client variables of MR, severity of dependence and psychopathology would be significantly better predictors of treatment completion than static client variables of age, gender and DOC.

Method

Participants

The sample comprised 28 residents (17 males and 11 females) undergoing treatment for substance abuse in Arcadia House, a short-term (56 days) residential MTC in the Australian Capital Territory (Australia), comprising detoxification and transitional rehabilitation. Participation in the study was voluntary and anonymous. Participants were involved in both types of treatment; some completing detoxification only (32.1 percent) and others completing transitional rehabilitation (67.9 percent; Table I).

<i>Demographics and characteristics</i>	<i>Subcategories</i>	<i>n</i>	<i>%</i>
Total	–	28	100.0
Gender	Male	17	60.7
	Female	11	39.3
Country of birth	Australia	26	92.9
	Outside of Australia	2	7.1
Indigenous status	Aboriginal and/or Torres Strait Islander	2	7.1
	Non-Aboriginal and/or Torres Strait Islander	26	92.9
Relationship status	Single	15	53.6
	Married	3	10.7
	<i>De facto</i>	5	17.9
	Separated/divorced	2	7.1
	Other	3	10.7
Parental status	Parent	16	57.1
	Non-parent	12	42.9
Educational status ^a	Primary	2	7.1
	Secondary; 1-2 years	3	10.7
	Secondary; 1-3 years	8	28.6
	Year 10	2	7.1
	Senior secondary/college	5	17.9
	Tertiary	6	21.4
Employment status	Currently employed	7	25.0
	Not currently employed	21	75.0
Drug of concern	Alcohol	15	53.6
	Cannabis	3	10.7
	Amphetamine type stimulants	5	17.9
	Opioids	5	17.9
Previous interventions	None	12	42.9
	Counselling	4	14.3
	Detoxification	5	17.9
	Residential rehabilitation (non-TC)	3	10.7
	Residential rehabilitation (TC)	3	10.7
	Opioid maintenance	1	3.6
Legal involvement ^b	Past or current involvement	14	50.0
	No involvement	14	50.0

Notes: ^aTwo participants declined to answer; ^blegal involvement is defined here as involvement in any illegal activity other than just the use of illegal drugs; common types of illegal activity include break and enter, robbery, drug supply and drug related driving

Design

Research design was a prospective cohort study, using an anonymous, self-report survey questionnaire of MR for treatment. The survey was completed by residents participating in the program between January and March 2011. As participants had provided permission for completion data to be collected, this was gathered through collection of National Minimum Data Set (NMDS; Australian Institute of Health and Welfare (AIHW)) statistics eight weeks following admission. Participants also provided responses to a number of structured open-ended questions to gather qualitative feedback on personal treatment goals and satisfaction with treatment.

Measures

The survey sought demographic information of gender, indigenous, occupational and legal status, together with a brief, three item, structured, open ended questionnaire which gathered exploratory information about MR and the perceived treatment needs of clients. Items in this questionnaire included: "What are your main goals for treatment? List three"; "What is needed for you to achieve your goals?" and "Do you have plans for aftercare once discharged? What do these plans involve (e.g. residential rehabilitation, half-way house, attending AA/NA meetings, counselling, etc.)?" Additionally, the survey comprised the Depression, Anxiety and Stress Scale 21 (DASS-21; Lovibond and Lovibond, 1995); the Severity of Dependence Scale (SDS; Gossop *et al.*, 1995); and the Circumstances, Motivation and Readiness Scale (CMR; De Leon and Melnick, 1998).

The DASS-21 (Lovibond and Lovibond, 1995) is intended as a measure of distress on the axes of depression, anxiety and stress. The SDS (Gossop *et al.*, 1995) measures dependence experienced by users of different substances and was used in the current study as a measure of substance dependence. The CMR (De Leon and Melnick, 1998) was designed for drug using populations to measure MR for treatment as a predictor of treatment retention. In this instance, the CMR was used as a measure of treatment MR.

Procedure

Permission for the study was provided by the University of Canberra (Australia) Human Ethics Committee. Participation was voluntary, and those taking part completed an informed consent form prior to completing the survey, which they did individually, and in direct observation of the researcher. When completed, the questionnaire was placed in an envelope, sealed and returned directly to the researcher.

The research methodology included a classification procedure proposed by Gay and Airasian (2000). Quantitative data was analysed using PASW Statistics by SPSS (version 18.0), and content analyses using the method of constant comparison (Krippendorff, 2004) was used to analyse qualitative responses.

Results

Some participants ($n = 9$) provided invalid responses for the "C" scales in the CMR. Specifically, these participants answered "not applicable" to more than one item on both or either of the "C" scales. Due to the small sample, only scores from "M" and "R" scales were collated and these were valid for all participants ($n = 28$). The summation of "M" and "R" scores is used to represent the measure of MR.

MR scores for all participants ranged from 36 to 64 points ($M = 51.57$; $SD = 6.37$) from a possible total score of 90. DASS-21 scores ranged from 10 to 104 points ($M = 55.71$; $SD = 25.20$) from a possible total score of 126. SDS scores ranged from 3 to 15 points ($M = 10.14$; $SD = 2.88$) from a possible total of 15. Ages ranged from 19 to 66 years ($M = 34.71$; $SD = 11.17$).

Correlation statistics were calculated to investigate possible associations between continuous dependent variables and assumptions of normality and linearity assessed. Although assumption of normality was violated with respect to the distribution of age scores,

normality and linearity assumptions were supported for MR, DASS-21 and SDS scores. Subsequently, and for the purpose of providing consistency, only parametric calculations were conducted.

Bivariate correlations between the three variables of MR, DASS-21 and SDS were calculated. Significant correlations were established for DASS-21 and MR, and DASS-21 and SDS. The relationship between DASS-21 and MR was positive and strong, $r(26) = 0.52$, $p = 0.004$; and there was a positive and moderate correlation between DASS-21 and SDS, $r(26) = 0.44$, $p = 0.018$. There was a non-significant relationship between SDS and MR, $r(26) = 0.35$, $p = 0.065$.

Overall, participants were more likely to complete treatment ($n = 15$) as opposed to leaving treatment prematurely ($n = 13$). Means, standard deviations and significance values of age, MR, DASS-21 and SDS, by completion status are shown in Table II.

To examine the impact of dynamic client variables and client matching on treatment retention, and to test the hypothesis that program completers and non-completers would differ based on MR, DASS-21 and SDS scores, independent samples t -tests were calculated. More specifically, an independent samples t -test was used to compare the average MR score for participants who completed treatment ($n = 15$) with those who did not complete treatment ($n = 13$). The t -test was statistically non-significant, with the treatment completers group ($M = 53.33$, $SD = 5.65$) reporting non-significantly different total MR scores on average 3.79 points higher (95 percent, confidence interval (CI) = ± 4.8 points)) when compared with the non-completers group ($M = 49.54$, $SD = 6.77$), $t(26) = 1.62$, $p = 0.118$. Cohen's $d(0.61)$ indicated a medium effect size.

For DASS-21, participants who completed treatment ($n = 15$) did not differ significantly from those who did not complete treatment ($n = 13$), with the treatment completers group ($M = 63.07$, $SD = 21.31$) reporting non-significantly different total DASS-21 scores on average 15.84 points higher (95 percent CI = ± 18.96 points) than the non-completers group ($M = 47.23$, $SD = 27.45$), $t(26) = 1.72$, $p = 0.098$. Cohen's $d(0.64)$ indicated a medium effect size.

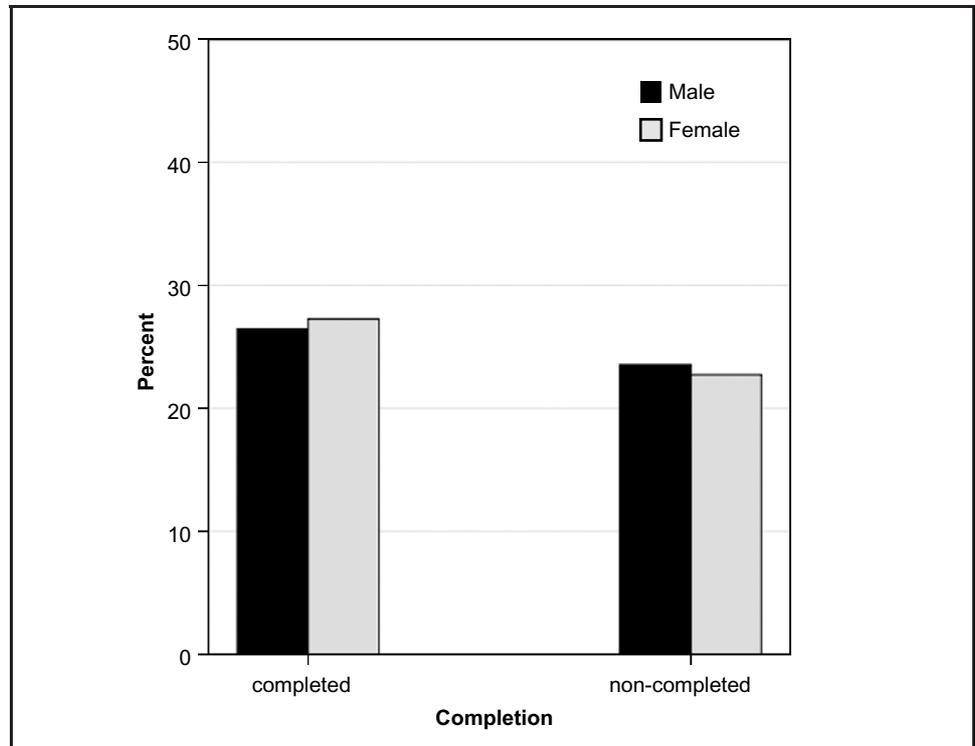
For SDS, participants who completed treatment ($n = 15$) differed significantly from those who did not complete treatment ($n = 13$), with the treatment completers ($M = 11.27$, $SD = 2.40$) reporting significantly different total SDS scores on average 2.42 points higher (95 percent CI = ± 2.06 points) than the non-completers group ($M = 8.85$, $SD = 2.91$), $t(26) = 2.41$, $p = 0.023$. Cohen's $d(0.91)$ indicated a large effect size.

For age, those who completed treatment ($n = 15$) did not differ significantly from those who did not complete treatment ($n = 13$), with the treatment completers group ($M = 33.07$, $SD = 9.65$) being non-significantly different in age, and on average 3.55 years younger (95 percent CI = ± 8.75 years) than the non-completers group ($M = 36.61$, $SD = 12.84$), $t(26) = -0.83$, $p = 0.412$. Cohen's $d(0.31)$ indicated a medium effect size.

A 2×2 Pearson's χ^2 -test of contingencies (with $p=0.05$) was used to evaluate if gender (male vs female) was related to treatment completion (completers vs non-completers), and it was indicated as non-significant, $\chi^2(1, n=28) = 0.01$, $p = 0.93$. No further assumptions can be made from the data due to the small sample size. Figure 1 shows a graphical representation of the effect of gender on treatment completion rates.

Table II Means, \pm SD and p -values of independent variables by dependent variables				
	Completers ($n = 15$)	Non-completers ($n = 13$)	Comparison	p
MR	53.33 (5.65)	49.54 (6.77)	3.79	0.118
DASS-21	63.07 (21.31)	47.23 (27.45)	15.84	0.098
SDS	11.27 (2.40)	8.85 (2.91)	2.42	0.023
Age	33.07 (9.65)	36.62 (12.84)	-3.55	0.412

Figure 1 Program completion by gender



A 4×2 Pearson's χ^2 -test of contingencies (with $p=0.05$) was also used to evaluate whether DOC (alcohol, cannabis, amphetamines and heroin) was related to treatment completion (completers vs non-completers). Results revealed that there was no significant relationship between DOC and program completion, $\chi^2(3, n=28) = 1.20$ $p = 0.74$. It should be noted here that this finding should be interpreted with caution as the assumption of expected count to be above 5 has been violated. Once again, no inferences can be made from the data due to the small sample size. Nevertheless, it is interesting to note that alcohol and opioid users were more likely to complete treatment compared to amphetamine and cannabis users. Figure 2 shows a graphical representation of the dependent nature of DOC and treatment completion.

Overall, findings indicate that successful outcomes, as measured by treatment completion, are mediated by SDS scores only. DASS-21 and MR scores were shown to be non-significant predictors of completion, although a trend in favour of the research hypothesis was established. Age, gender and DOC were non-significant predictors of completion. Due to the small sample size no conclusions can be made regarding the effect of these variables on treatment retention.

Content analyses

Structured, open-ended questions were used to collect qualitative information, and content analysis was utilised to analyse and interpret that data. The results obtained are summarised in Table III and this is followed by a more comprehensive interpretation in text. An explanation of each theme is briefly considered and quotes from individual participants are provided in support of the interpreted data. Each respondent has been assigned a unique code (e.g. P1A) to highlight impartiality in interpretation.

Use cessation

Participant responses could be divided into three further themes under the heading of "use cessation", highlighting the goals of non-dependence, improved lifestyle and participation in interventions/programs.

Figure 2 Program completion by DOC

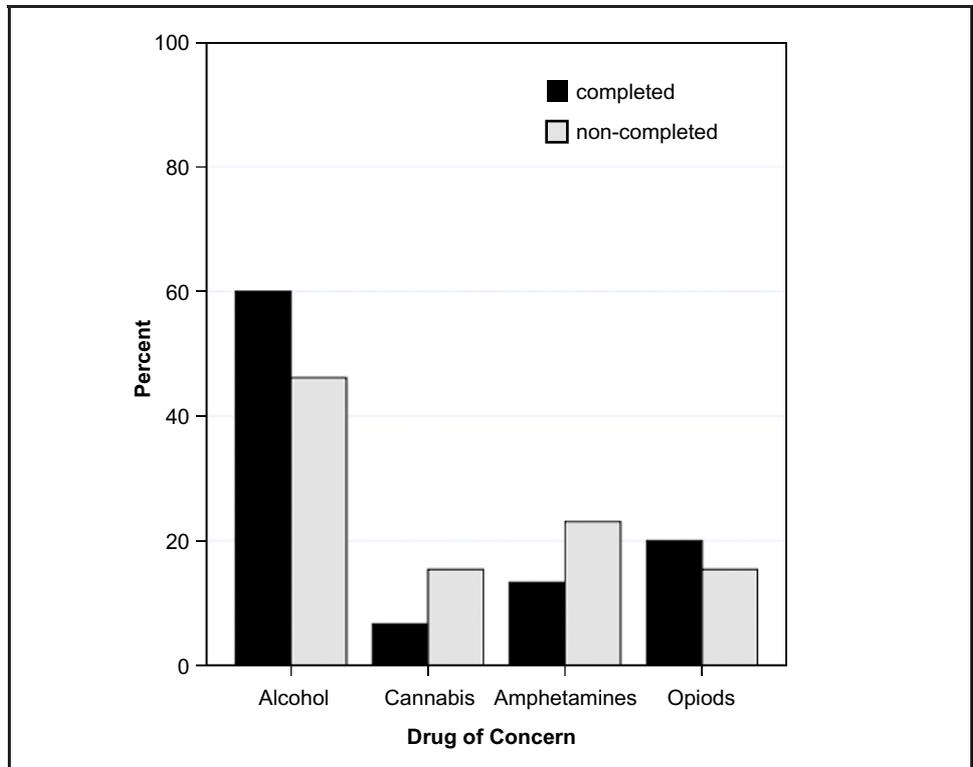


Table III Content analysis summary

Interview question	Master theme	Subthemes	Supporting quotes (shown in text)
"What are your main goals for treatment? List three"	Use cessation	Non-dependence	i
		Improved lifestyle	ii
		Participation in interventions/program	iii
"What is needed for you to achieve your goals?"	Rehabilitation	Support	iv
		Time out	v
		Internal attributes	vi
"Do you have plans for aftercare once discharged from Arcadia House? What do these plans involve (e.g. residential rehabilitation, halfway house, attending AA/NA meetings, counselling, etc.)?"	Interventions	Mental health	vii
		Substance use	viii

Non-dependence. Participants identified that return to pre-morbid or ideal or "normal" level of functioning was important with respect to use cessation:

- (i) "get life back on track and away from drugs" (P1I); "better life without alcohol" (P1B); "live life without using" (P1H).

Improved lifestyle. Relationships were most frequently endorsed as an area requiring attention. Other references to lifestyle goals included physical and mental health, employment and finances:

- (ii) "commence exercise routine" (P1L); "regain physical health" (P1T); "be able to work properly" (P1P).

Participation in interventions/programs. Participants identified a need to improve coping skills to prevent relapse and seeking aftercare was noted as an important treatment goal:

(iii) “stabilise on methadone” (P1U); “strategies to prevent drinking” (P1L); “learn about recovery and relapse prevention techniques to remain sober” (P1U).

Rehabilitation. Four participants did not respond to this question. Participant responses were divided into three further themes under the heading of “rehabilitation”, highlighting the requirements of goal attainment including support, time out and internal attributes.

Support. Assistance, information and support were important in goal achievement. Support from family members was reported most often, followed by friends and staff. Support through counselling and peer support groups was also endorsed:

(iv) “support from family and friends” (P2A); “agency and familial support” (P1D); “remain in rehab and work through problems” (P1J); “medication (depression)” (P1N).

Time out. Many substance users need time in order to achieve set goals. Common responses reflected a need for time to think and reflect. The notion of time, whether to develop new skills, provide opportunity for reflection or relaxation, or to abstain for a certain period of time, was frequently endorsed, stressing the concept of harm minimisation, an important consideration in the Australian context as it forms an integral part of the Australian Government’s platform on AOD treatment:

(v) “have a break” (P1); “clean time” (P1D); “a week not drinking” (P1L).

Internal attributes. Internal positive attributes such as motivation, determination, confidence, effort and integrity were perceived as key factors that aid goal attainment:

(vi) “character strength” (P1B); “will power” (P1U); “confidence and emotional security” (P1X); “stay determined with myself and the program” (P1V).

Interventions. There was considerable consistency in response to this item. Results indicate that the majority of participants had intentions to participate in formal aftercare. In fact, only two participants did not respond to this item, and only four indicated that no formal aftercare was required. Participant responses were divided into two further themes under the heading of “interventions”, highlighting mental health and substance use specific treatments perceived as necessary aftercare interventions:

(vii) “counselling” (P2B); “individual counselling” (P1C); “psychologist” (P1L);

(viii) “Re-commence work” (P1C); alcoholics anonymous (AA) (P2C); “SMART” recovery (P2A); narcotics anonymous (NA) (P1H); “rehab” (P1T); “replace using habits with old hobbies and exercise” (P1N).

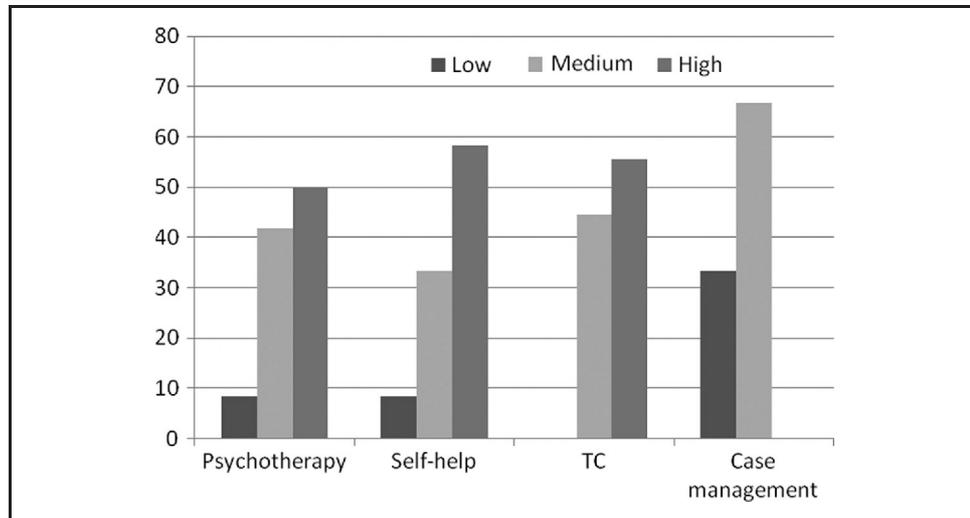
Further exploration of qualitative data was undertaken to examine more closely the relationship between SDS and retention in transition rehabilitation. Overall, the aftercare items most commonly endorsed included counselling or psychotherapy (42.9 percent), self-help groups (42.9 percent) and residential rehabilitation (TC) (32.0 percent).

Participant scores were grouped according to SDS range, and are shown in Figure 3. Participants with high SDS scores more frequently indicated intentions to participate in aftercare than those within medium and low SDS scores.

Discussion

The findings of this study, as obtained through quantitative data analyses, indicate that successful outcomes, measured by treatment completion, are mediated by severity of dependence only, with higher scores significantly predicting treatment completion. This result supports one of the research hypotheses. In this study, psychopathology and MR were shown to be non-significant predictors of completion. As hypothesised, age, gender and DOC similarly did not predict completion.

Figure 3 Substance dependence severity by percentages of participants seeking different types of aftercare



While the effect of moderator variables has not been well established in the current study, the positive effect of substance dependence severity on retention was found to be both statistically and clinically significant. However, results do suggest that short-term integrated treatment programs may play an important role in engaging chronic substance-using populations as an introduction to treatment. Indeed, examination of qualitative data adds support to this conclusion. That is, many participants indicated that respite is a desirable treatment requisite. In addition, it was found that those with higher SDS scores more frequently reported intentions to engage in aftercare. Subsequently, short-term transitional TCs provide an opportunity for engagement and exploration of further treatment options; an advantage compared to detoxification alone.

Certainly, short-term programs appear valid as a harm-reduction treatment option. A short-term, six week circuit breaker program (a modified TC in Benalla, Victoria, operated by Odyssey House, Victoria) has demonstrated promising findings with residents who completed the program reporting increased self-efficacy and motivation for change (E. Allan, personal communication, September 7, 2011). Furthermore, in an unpublished study, it was found that 15 percent of Circuit Breaker residents chose to enter Odyssey House, a long-term TC treatment following completion of the Circuit Breaker, whilst other residents engaged in alternative aftercare options (E. Allan, personal communication, September 7, 2011). Short-term programs may offer a stepping stone for more intensive, evidence-based substance use treatments.

The idea that progressive treatment is advantageous is supported further by research, demonstrating the positive effect of a staged approach. Toumbourou *et al.* (1998) demonstrated that level of attainment in treatment, rather than time spent in treatment *per se*, was associated with successful outcomes. These results suggest the importance of self-efficacy and staged commitment to change and offer further support to this study by indicating that level of motivation for change is an important predictor variable.

Consequently, short-term transitional programs may offer an advantage in providing a positive gateway to treatment, engaging the substance-using client and providing an opportunity to develop skills and increase MR for change. These results support the transtheoretical model of change described by Prochaska *et al.* (1992) which suggests that people should be provided with treatments that are suited to the change stage they are in. Since research has demonstrated the effectiveness of long-term treatments for substance use, and commitment and readiness has been shown to be a strong predictor of success in these treatments, transitional programs may offer a cost-effective, safe, and alternative

treatment option, or act as an effective introduction to a longer term treatment program. Accordingly, future research could examine more closely the effectiveness of short-term transitional treatments and specifically, the mechanisms assisting engagement and/or retention.

In this study, motivation, readiness and psychopathology were found to be non-significant predictors of retention, although non-significant trends in favour of the research hypothesis were observed. Confidence interval and effect size data indicates that the results have clinical relevance and as such it cannot be assumed that the small nature of our sample was the sole contributing factor to this result. Instead, it may be that the measures used to investigate these variables were ineffective in this instance. The results obtained examining the effects of static client variables on completion rates are ambiguous. No effect was established for age, supporting evidence established in larger research studies (Condelli, 1994; De Leon, 1984; Simpson and Sells, 1982).

Clearly, there are some caveats within the current research and consequently results should be viewed with caution. It is important, however, that both the strengths and limitations of the current design are considered. The strengths of the research design include external validity in the results obtained, as the characteristic nature of this sample appears to replicate characteristics of the larger substance use population. The 2010 AIHW-NMDS report for 2008-2009, the key monitoring and evaluation tool which captures the number of closed treatment episodes, showed those using amphetamines or cannabis were less likely to complete treatment (AIHW, 2010). Nationally, participants were more likely to be male (66 percent), less likely to be Aboriginal and/or Torres Strait Islander (14 percent) and most likely to have alcohol as a principal DOC (51 percent; AIHW, 2010). The demographic data obtained from our sample is somewhat similar in that those with amphetamine or cannabis use as a principal DOC were less likely to complete treatment, 60.7 percent of participants were male, 7.1 percent Aboriginal and/or Torres Strait Islander and 53.6 percent noted alcohol as the principal DOC. Subsequently, the findings established are clinically relevant and potentially generalisable.

Second, the decision to measure MR based on total "M" and "R" scale scores was carefully considered. Invalid results were obtained from nine participants in response to the "C" scale of the CMR. With a larger population sample, these participants could have been omitted from the study. It was decided though, due to the already small sample size, that the measure of MR could be effectively established by a total of "M" and "R" scales. Indeed, the means and standard deviations of total MR scale scores established in this study ($M = 51.57$, $SD = 6.37$) are similar to those established by Melnick and De Leon (1999). Furthermore, total MR scale scores have demonstrated good reliability with Chronbach's α coefficients ranging from 0.79 to 0.93 (Melnick and De Leon, 1999).

Last, other research examining the impact of client variables on retention in a short-term rehabilitation treatment program could not be located. Some have investigated the effectiveness of short-term TC treatment programs and found positive results (McCusker *et al.*, 1995), although the impact at which client variables mediate such effects was disregarded. Others have investigated the impact of fixed and dynamic client variables on retention in long-term TC treatment settings (Condelli and De Leon, 1993) whilst neglecting the influence of these variables in short-term TC treatments. Through addressing this gap in the research literature and investigating the impact of client variables on retention, this study has been able to inform this important clinical and research area.

In spite of these advantages, there are some caveats which pose a significant threat to the integrity of our findings and these cannot be overlooked. First, at this time, the effectiveness of the treatment program is unknown. The "transitional" approach to rehabilitation is a relatively new concept to the research field and requires further study.

Although in this study MR was not found to be an effective predictor of retention, motivation for change should be viewed as a fluctuating state, which is subject to both internal and external influences. As such, while someone may be motivated by a number of factors to enter treatment, retention will be subject to a number of variables. Due to the relationship

between retention and other positive outcome measures, it is important to continue the investigation of predictors of retention in short-term modified TCs. Alternatively, outcome measures other than retention may be a worthwhile area for investigation into treatment effectiveness and these may include psychosocial outcomes or continuation in aftercare. Indeed, if the purpose of “transitional” rehabilitation is to link people into longer term treatments, perhaps a more valid measure of success would be to determine if participants actually go on to aftercare upon treatment completion.

At this time, results obtained are preliminary. There is inconclusive evidence to suggest that either dynamic or fixed client variables are better predictors of retention. However, it is suggested that short-term TC treatments are beneficial as a gateway or introduction to well established and effective long-term treatments – particularly for those with higher levels of substance dependence – and may be more effective than detoxification alone. This outcome is promising, particularly given the economic climate that surrounds substance use treatment provisions. While the reasons for the effects established are unknown, future research could examine more closely the relationship between short-term treatments and aftercare as well as the variables mediating retention in short term treatments.

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