

**Friends matter but so does their substance use: The impact of social networks on substance use, offending and wellbeing among young people attending specialist alcohol and drug treatment services**

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**Friends matter but so does their substance use: The impact of social networks on substance use, offending and wellbeing among young people attending specialist alcohol and drug treatment services**

**Abstract**

**Aims:** The current study assesses the impact of youth drug treatment on substance use, offending and wellbeing in a sample of young people recruited from specialist youth alcohol and drug treatment. The paper examines the impact of treatment engagement on the size and substance use profile of the young person's social network and hypothesises that the best treatment outcomes are associated with maintaining the size of the young person's social network but changing its composition to reduce the representation of substance use in social networks.

**Methods:** A cohort study of 112 young people (aged 16-21) engaged in specialist youth alcohol and drug treatment services in Victoria, Australia, were recruited at the beginning of treatment and re-interviewed six months later using a structured questionnaire.

**Findings:** There were improvements in substance use, social functioning, mental health and life satisfaction from baseline to follow-up. While network size was associated with mental health and quality of life markers, only having a lower proportion of substance users in the social network was associated with lower substance use and offending at follow-up.

**Conclusions:** Social networks are a key component of wellbeing in adolescence. This study suggests that, through independent analysis of network size and network composition, both the size and composition of social networks have an important role to play in developing interventions for adolescent substance users that will sustain behaviour changes achieved in specialist treatment.

**Key words: Social networks; Adolescent treatment; Social identity; Treatment effectiveness; Offending; Treatment outcomes**

## Introduction

This paper examines the impact of social networks on substance use during and after specialist alcohol and drug treatment for young people. The study is important in that it addresses the impact of retaining friendship networks engaged in ongoing substance use on use and the risks for dropping such networks without being able to replace them. The applied importance of the paper are around the implications for managing social network change to maximise the effects of substance use treatment.

Within the Australian context, despite a high prevalence of lifetime substance abuse and sporadic binge drinking, around 5% of adolescents meet criteria for SUD, most commonly harmful alcohol use, with slightly higher rates estimated for 16-24 year olds (Slade et al., 2009). National survey data (AIHW, 2011) indicate that 18% of 14-19 year olds consume alcohol weekly, and 0.5% reported daily alcohol use. Over 17% of this same age group were weekly cannabis users, with daily cannabis use estimated to be 5-6% of 14-19 year olds. Other illicit substance use is much less common, with 4.7% having ever used ecstasy, 2.4% amphetamines, 2.1% hallucinogens, 1.2% inhalants and 0.3% heroin. Problematic alcohol and cannabis users represent 70% of all publicly funded treatment episodes in Australia (AIHW, 2013), a rate significantly higher than in many European countries. Adolescent substance use is rarely an isolated behaviour and is often associated with a number of risk factors and harms: namely economic deprivation, educational and vocational failure, persistent problematic behaviour, criminal offending and violent behaviour, and familial alcohol and drug misuse and/or conflict (Hawkins, 2009; Loxley et al., 2004; Spooner et al., 1996).

The transition to early adulthood is a period of increased risk for the development of substance use disorders (SUDs) (Merikangas & McClair, 2012), with social network characteristics consistently predictive of problematic use (Arthur et al., 2007; Beyers et al., 2004; Henry et al., 2011).

However, there is evidence that specialist alcohol and drug treatment can be effective with adolescent populations. The majority of young AOD treatment users experience a significant reduction in substance use and improvement in other areas of life, such as level of criminal behaviour and mental health (Catalano et al., 1991; Williams & Chang, 2000). However, relatively little is known about the impact of adolescent treatment on global indicators of wellbeing and quality of life. Catalano et al (1991) concluded that some treatment is better than no treatment, that few comparisons of treatment method have consistently demonstrated the superiority of one method over another, and that post-treatment relapse rates are high. More optimistically, Dennis et al (2004), reporting on the Cannabis Youth Treatment (CYT) study, found through a series of trials that evidence-based community interventions were effective in achieving two outcomes - reductions in days of use and the percentage of clients achieving abstinence. Williams and Chang (2000) reported that, while there have been relatively few studies of adolescent substance abuse treatment, that in methodologically stronger studies have usually found most adolescents receiving treatment to have significant reductions in substance use and problems in other life areas with average rates of sustained abstinence after treatment is 38% at 6 months and 32% at 12 months.

In adult populations, pre- and post-treatment social networks supportive of substance use also consistently predict higher risk for relapse post-treatment (Longabaugh et al., 1998; Longabaugh et al., 2010; Best et al., 2012; Best et al., 2003; Knapp et al., 2007; Landale & Best, 2013; Litt et al., 2009). For example, in one of the largest studies examining alcohol treatment outcomes, participants with more abstinent social network members post-treatment demonstrated a greater percentage of days abstinent and lower volumes of monthly alcohol consumption 4-9 months post-treatment (Zywiak et al., 2002). Daily contact with the post-treatment social network, as an index of network investment, also showed significant positive relationships to increased abstinence and lower monthly volumes of alcohol consumed from 4 to 9 months post-treatment, but not during or immediately after treatment (Zywiak et al., 2002). In a study of 141 individuals dependent on cocaine, Zywiak and colleagues (2009) found that patients who had better treatment outcomes

following inpatient detoxification reported larger social networks, more frequent contact with their social network, and importantly, an increase in the proportion of people in their social network who did not drink alcohol or use other substances. Finally, in a randomised trial of dependent drinkers completing detoxification, Litt et al. (2009) found that the addition of one abstinent person to a participant's social network translated to a 27% increase in the probability of maintaining 90% days abstinence at 2 years post-treatment.

While limited research has been conducted examining the impact of social networks in terms of drug treatment outcomes among young people with SUDs, there is some evidence that similar principles apply. For example, in a sample of adolescents in the US, Vik et al. (1992) found that the negative effects of support for continued substance use from substance-using social networks were reduced when adolescents did not see members of these networks as similar to themselves. Conversely, the positive effects of recovery support from non-substance using social network members were enhanced when adolescents rated these network members as similar to themselves. The authors concluded that the degree to which adolescents perceived members of their social network as similar to themselves moderated the impact of social network support for their recovery, as well as influencing their relapse risk post-treatment.

The work on social network transitions and its impact not only on substance use but also on linked behaviours such as offending has not been well articulated in studies of youth alcohol and drug treatment effectiveness. To address these gaps in the literature, we assessed the social networks of young people engaged in specialist youth alcohol and drug treatment at the start of treatment and 6 months later, with the aim of exploring the relationship between changes in the size and using composition of their social networks on measures of substance use, offending and wellbeing. The aim of the paper was to assess what happens to the social networks of young substance users who enter specialist treatment and whether changes in both size of network and composition of network

(the proportion of other users in the network) would be associated with changes in substance use and other measures of wellbeing after the completion of treatment.

Based on the previous literature, we predicted that (i) engagement in treatment would be associated with improvements in substance use and related problem behaviours such as offending and wellbeing; (ii) that improved outcomes would be related to transitions in social network both in terms of the size of the social network and its composition (in terms of the proportion of network members who are also substance users; and that (iii) maintaining the size of the social network and transitioning the composition of the social network from users to non-users would both independently be associated with better treatment outcomes.

## **Method**

### ***The Youth Cohort Study***

Participants were recruited from June 2009 to April 2010, from youth residential withdrawal programs, outreach and counselling programs (community health and specialist programs), residential rehabilitation, youth specific health and housing agencies, and community health facilities including needle syringe programs (Best et al, 2012). The overall structure of the Victorian Youth substance use treatment system is explained

The main objectives of the study were to:

- Identify and describe young people's AOD treatment experience and pathways;
- Locate AOD youth treatment in the wider context of help-seeking and complex needs
- Monitor changes in service utilisation, substance use and wellbeing over time
- Assess young people's experiences of specialist AOD treatment and their treatment journeys

The aim of the project was to recruit young people early in treatment across the full range of treatment modalities to allow changes to be measured during and after treatment. However, a wide time window had to be used given the vulnerability of some potential participants at the start of treatment and because of the low frequency of service contact in some (community) agencies. The aim was to be inclusive to allow a broad range of research participants to be involved. The study used an 'intention to treat' design to test the hypotheses in part because of the ongoing nature of treatment for many young people (where there may be transitions between modalities) and in part because the aim was to assess the impact of exposure to treatment on social networks, irrespective of whether it was completed (which in any case is hard to determine with certain community treatments for young people).

Participants were recruited within six weeks of starting treatment and were re-interviewed at 6 months. To be eligible for participation in the study, young people had to be aged 16-21 years old, to have had at least two contacts with a Victorian Alcohol or Other Drug (AOD) treatment agency in the previous month, and to have used alcohol or drugs at least weekly in the past month (unless engaged with abstinence based residential services for greater than 1 month). This study was approved by the Eastern Health's Human Research Ethics Committee.

The core standardised measures used in the study are the WHO-ASSIST V3.0 (Henry-Edwards et al., 2003; Humenuik et al., 2008) designed to assess drug and alcohol use; The global substance misuse measure used in the current study has a Chronbach's Alpha of 0.89. The Kessler Psychological Distress Scale (K10; Kessler et al., 2002) to assess psychological distress in the areas of nervousness, anxiety and depressive symptoms (Cronbach's alpha is high at 0.93); and the Opiate Treatment Index (OTI: Darke et al., 1992; coefficient alpha for internal reliability were 0.58 for social functioning and 0.38 for criminality) which is a multi-dimensional scale from which the sub-scales on social functioning and criminality were used in the Youth Cohort Study.

When scale reliability was tested with the current database, the K10 showed a Chronbach's alpha of 0.89 at baseline and 0.91 at 6-month follow-up. For the ASSIST global substance use risk, the baseline Cronbach's alpha was 0.76 and the follow-up was 0.64. For the OTI crime scale Cronbach's alpha scores were 0.61 at baseline and 0.55 at 6-month follow-up. For the social functioning scale of the OTI, the baseline Cronbach's alpha was 0.56 and 0.58 at the 6-month follow-up.

Additionally, participants were asked to rate their overall life satisfaction on a 'ruler' ranging from 0-10. This was adapted from the wellbeing rulers used in the Australian Treatment Outcome Profile (Ryan et al, 2014) where similar measures are used to assess psychological and physical wellbeing and quality of life. Social support variables, taken from the OTI social functioning scale were examined in more detail, using individual items that asked participants how many close friends they had (the response options were 'none', 'one', 'two', 'three' or 'four or more'). Participants were also asked how frequently they saw their friends (response options of 'never', 'rarely', 'sometimes', 'often' or 'very often'). Satisfaction with support was measured on a five-point Likert scale ranging from 'very satisfied' to 'very unsatisfied', and frequency of conflict with friends was categorised as 'never', 'rarely', 'sometimes', 'often' or 'always'. This was then recoded into 'some conflict' or 'no conflict' as the responses were not evenly distributed across the categories with a skew towards no conflict in the current sample.

**Analysis:** Repeated measures t-tests were used to assess change in outcomes over time to test research question 1 around treatment effectiveness, where the same measures were collected at baseline and at follow-up. This was done to allow assessment of outcomes in the key areas of substance use, offending risk, health and wellbeing, and social functioning. Bi-variate correlations were applied to assess the association between the key social network, substance use, offending and wellbeing measures at follow-up, to test research question 2.



## RESULTS

### Sample

In the Youth Cohort study, 150 participants were recruited – 98 from residential treatment services (79 from residential withdrawal and 19 from residential rehabilitation), and 52 from community services. For the current paper, the analysis focuses on the 112 young people who were engaged in specialist youth alcohol and drug treatment who were successfully retained from baseline to 6-month follow-up, irrespective of whether they were retained in treatment (a study retention rate of 74.7%).

Participants were between the ages of 16 and 21 years ( $M = 18.5$ ,  $SD = 1.7$ ). 95% were born in Australia, 17% were of Aboriginal or Torres Strait Islander (ATSI) heritage, and almost all participants (97%) spoke English at home. 64 (57.1%) were male and 48 (42.9%) were female. At the time of baseline recruitment, 8% of the sample were in full-time employment, 19% were in some form of education, and 73% were on some form of Government benefit. 35.3% of participants were living in the parental home at the time of the baseline interview, and 31% had completed year 10 or higher in terms of their schooling achievement. Twenty-three of the participants (20.5%) were in education at the time of the baseline interview.

In terms of mental health diagnoses, 39% reported a formal diagnosis for depression and 34% for anxiety. In terms of their substance use at baseline, 76 (67.9%) reported that they had used cannabis daily or nearly daily in the three months before treatment engagement; 38 (33.9%) drank alcohol daily or nearly daily; 13 (11.6%) used opioids daily or nearly daily; and nine (8.0%) had used amphetamine type stimulants daily or nearly daily. Thirty-nine (34.8%) reported lifetime injecting of drugs, of whom 24 had done so in the past three months. Although problematic use of either alcohol or illicit drugs was sufficient for inclusion in the sample, this is a polydrug using cohort as indicated below:

- 67.3% use tobacco and cannabis daily/almost daily
- 23.3% use tobacco, cannabis and alcohol daily/almost daily
- 60% used 1-2 substances daily/almost daily (excl. tobacco)
- 40% used 3+ substances daily/almost daily (excl. tobacco)

At the baseline interview, 54 (48.2%) were engaged in residential withdrawal services, 14 (12.5%) in residential rehabilitation services and 44 (39.3%) in out-patient AOD treatment services. A large proportion of the cohort (n=67, 59.8%) reported a history of receiving treatment for a mental health problem. With regard to criminal justice, 45 young people (40.2%) reported a history of previous incarceration (with a mean age of first incarceration of 16.2 (SD = 1.9)).

### **Changes in functioning and wellbeing from baseline to follow-up**

The overall impact of treatment on a range of domains is shown in Table 1 below:

INSERT TABLE 1 ABOUT HERE

### **Friendship networks at baseline**

Social network size: When asked how many close friends they had, ten young people (8.9%) said 'none', 11 reported one (9.8%), 24 reported two (21.4%), 22 (19.6%) reported three and 45 (40.2%) reported 'four or more'. When asked how often they saw friends, 12 (10.7%) reported 'never or no friends', 6 (5.4%) reported rarely, 18 (16.1%) reported sometimes, 29 (25.9%) reported often and 47 (42.0%) reported very often. The majority of participants reported that, in times of conflict they had someone they could rely on (n=89, 79.5%).

Substance use in the social network: Young people were asked 'how many people you hang with are drug users?' Fifteen young people (13.4%) reported that there were none, 13 (11.6%) reported that it was less than half, 22 (19.6%) reported that it was about half, 26 (23.2%) that it was more than half and 36 (32.1%) reported that all of the people they hung about with were drug users.

**At baseline:** there was no clear association between the proportion of friends that were substance users and the young person's global substance risk score on the ASSIST ( $F=1.27$ , ns), nor in the number of drug types used or the OTI crime score. There was a significant relationship between a greater proportion of friends being substance users and poorer social dysfunction scores on the OTI ( $F=14.28$ ,  $p<0.001$ ). There was no relationship between frequency of contact with friends and measures of substance use and offending.

**Follow-up:** The relationship between the proportion of friends who were drug users and key aspects of substance use at the follow-up point are shown in Table 2. The greater the proportion of drug users in the social network at the follow-up point, the greater the range and problems associated with drug use, the greater the engagement in offending and the greater the level of social dysfunction reported by young people at follow-up. Less frequent contact with friends was associated with scoring significantly higher on the OTI sub-scale for social dysfunction ( $F=12.88$ ,  $p<0.001$ ). There was no clear relationship between life or health satisfaction and the number of substance users in the social network.

INSERT TABLE 2 ABOUT HERE

There were clear links between the number of close friends young people had at the follow-up point and a range of wellbeing markers as shown in Table 3. While the number of friends (unlike the drug use composition of the social network) was unrelated to offending, it was strongly linked to wellbeing, with more friends associated with less psychological distress, greater overall life satisfaction and less social dysfunction. This finding was also the case for whether the young person felt they had someone they could depend on at the follow-up interview. Those who had ( $n=89$ ) reported significantly higher overall life satisfaction than those who did not ( $n=23$ ; means of 5.5 and 4.0 on the 0-10 scale of life satisfaction;  $t=8.44$ ,  $p<0.01$ ) and lower K10 psychological distress scores (mean of 24.2 compared to 28.2;  $t=3.57$ ,  $p<0.05$ ). However, having someone to depend on had no relationship to measures of substance use or offending behaviour at the follow-up point.

INSERT TABLE 3 ABOUT HERE

### **Changes in social networks following treatment**

Figure 1 shows the change in the number of close friends young people reported having from treatment entry to the 6-month follow-up point. There was almost no change in the number of close friends reported from baseline.

INSERT FIGURE 1 ABOUT HERE

As shown in Figure 2, there was a reduction in the proportion of participants whose friendship network consisted solely of other drug users from around 40% to under 20% (McNemar test = 1.84,  $p < 0.05$ ).

INSERT FIGURE 2 ABOUT HERE

INSERT FIGURE 3 ABOUT HERE

Table 4 summarises the key changes in social networks.

INSERT TABLE 4 ABOUT HERE

It is interesting to note that where there was an improvement in family conflict, this was also associated with an improvement in friend conflict ( $r = 0.19$ ,  $p < 0.05$ ). Similarly, where there was an increase in the number of close friends there was an increased satisfaction in support from friends ( $r = 0.47$ ,  $p < 0.001$ ) as well as an improvement in the reported level of family conflict ( $r = 0.20$ ,  $p < 0.05$ ). Reductions in family conflict were also associated with greater overall reported life satisfaction ( $r = 0.20$ ,  $p < 0.05$ ) and with reduced offending risk scores on the OTI ( $r = -0.24$ ,  $p < 0.05$ ).

There is a positive association between reduction in proportion of the friendship network who were substance users and the ASSIST global risk score – in other words, when young people reduced the

number of drug users in their network, their own drug use problems reduced at the follow-up interview. Likewise, there was a close to significant association between reducing the number of drug users in the social network and reductions in offending measured on the OTI crime risk scale ( $r=0.18$ ,  $p=0.06$ ). Perceptions of improvements in friendship support was also associated with lower social dysfunction scores ( $r=-0.19$ ,  $p<0.05$ ).

However the key relationships are shown in Figure 5 below which show the associations between the two key dimensions of social networks and outcomes (wellbeing on the one hand and substance use and crime on the other).

INSERT FIGURE 4 ABOUT HERE

Larger social networks were associated with key areas of wellbeing (life satisfaction and lower psychological distress), while lower proportions of users in the network were associated with traditional substance treatment outcomes (reduced offending and reduced substance use). Both larger networks and having less users in the network were independently associated with lower levels of social dysfunction.

A logistic regression was conducted with reduction in drug use risk from baseline to 6-month follow-up with both reduction in network size and reduction in proportion of users in the network was statistically significant (Wald = 26.41) and correctly allocated 76.4% of cases. Reduction in the proportion of users in the network contributed to this finding (4.43,  $p<0.05$ ) but change in the size of social network did not. No significant effect was found for reduction in offending behaviour.

## **Discussion**

We found that young people who engaged in specialist alcohol and drug treatment reported improvements in substance use, offending behaviour and markers of subjective wellbeing. There were also moderate transitions in social networks with small reductions in the proportion of substance users in the network without an overall reduction in the network size of qualitative social

support (defined as perception that there is someone to rely on in a crisis and satisfaction of the social support received). While there is an established literature showing both that specialist alcohol and drug treatment improves a range of outcome measures (such as substance use and offending) and that transitions from using to non-using networks are associated with better outcomes, few studies have linked the two. The unique contribution of this paper is its demonstration that the association between social network transition and improved treatment outcomes in a cohort of young treatment seekers is independently linked both to maintaining network size but reducing the proportion of users in the network.

Our findings indicate there is not a simple relationship between social networks and wellbeing. While there was a strong relationship between network size and measures of social dysfunction and psychological distress, young people who ended up with fewer friends reported higher rates of psychological distress and poorer self-ratings of social functioning. However, network size was not directly related to substance use or offending as reported at the follow-up point. Where young people reported a higher proportion of substance users in their networks, they reported more substance use themselves and more offending, as indicated in the binary logistic regression which showed the impact of reducing the proportion of users in the network but did not indicate an effect of changing size of network on substance use reductions from baseline to follow-up.

What is new about the paper is the emphasis it places on social network transition as central to positive outcomes in youth substance use treatment. While it is clear that the reduction in the proportion of substance users in the network is beneficial for substance use and offending (something widely acknowledged by substance use workers), it suggests that this must be balanced against maintaining an adequate size of social network. This has important implications for youth substance treatment practice suggesting that workers must not only be aware of the size and composition of the social network but be ready and able to engage in interventions that enable and support social network transitions, as a key component of effective, holistic treatment approaches.

These results are consistent with the findings of Lau-Barraco and Collins (2011) in their study of non-problematic substance using adolescents in the US, and Zywiak and colleagues' (2009) finding that better outcomes resulted (among adult cocaine users) occurred when the proportion of non-users in the social network increased.

Our findings have important implications for intervention responses for youth treatment services in relation to social networks. Reducing young people's contact with groups containing more drinkers and drug users appear to be critical to reducing their substance use and offending, but there are risks if this results in less social engagement. One potential approach would be to map the social network of young people's social groups (Best et al, 2014) so as to determine the extent to which young people will need 'assertive linkage' to pro-social groups and activities (Manning et al., 2012). Young people who have social networks that consist largely of other substance users may need more prioritisation given to assertive engagement in non-using groups to maintain the benefits of alcohol and drug treatment without having the undesired effects of creating social isolation and loss. This will require workers (including peer workers) to have established links with prosocial groups in the community where the activities will not end up in the pub or in other risky activities, and it also relies on there being such positive community groups available and accessible. Likewise, they will need to address the question about whether the young person will need to be open about their recovery status and whether this could have adverse effects, and whether they have the social skills and resources to engage effectively with the group. Finally, the groups will have to be of sufficient attraction and appeal that the young person will be willing to attend and engage effectively with the group beyond the initial contact and linkage point.

There are a number of limitations to this paper that must be considered. Participants for this study were recruited from only one city and the study was entirely reliant on self-reported measures of wellbeing, substance use and offending. The measures used for social networks and satisfaction were single items taken from the OTI social functioning scale, and were not designed to be used in

this way. Finally, there was a level of attrition from baseline to follow-up that means there are limits to the generalisability of the findings (although a retention rate of around 75% would be considered acceptable in outcome studies). There is a wider question of representativeness in terms of application beyond Victoria and outside of the specialist youth alcohol and drug treatment system.

Nonetheless, the current paper suggests an important mechanism for linking social network size and social network composition with risks of offending, wellbeing and substance use in a group of high-risk young people. These results will need to be replicated in other settings with different populations, but the current findings add to a growing body of knowledge suggesting the importance of social network effects on wellbeing in young people.



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