Multiple pathways to recovery, multiple roads to well-being: an analysis of recovery pathways in the Australian Life in Recovery survey

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Multiple pathways to recovery, multiple roads to wellbeing: an analysis of recovery pathways in the Australian Life in Recovery survey

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Abstract

It is generally acknowledged that there are multiple pathways to alcohol and other drug (AOD) recovery. These may include the use of AOD treatment and/or mutual aid groups or not, as may be the case for people who take a 'natural recovery' pathway. However, it is unclear: 1) whether people who take specific recovery pathways have particular socio-demographic characteristics and histories of AOD use; and 2) whether specific recovery pathways are associated with better wellbeing. We aimed to address these two gaps by examining relationships between recovery pathways and socio-demographic characteristics, AOD use history and wellbeing measures in the Australian Life in Recovery survey sample (n=537). Compared to the treatment only (3.1%) and natural recovery (5.2%) pathway groups, people who engaged in treatment and mutual aid (67.6%), and mutual aid only (24.1%) were more likely to have been concerned about both their alcohol and other drug use, used mental health services and were the most socially isolated during addiction. Since being in recovery however, treatment and/or mutual aid pathway groups were the most likely to report having more important people in their life, and social networks consisting of a greater proportion of people in recovery and fewer AOD users in their networks ~~as~~ compared to the treatment only or natural recovery groups. People in all pathway groups reported high wellbeing currently and there were no significant differences in wellbeing measures between groups. Findings suggest that people in recovery tend to experience high wellbeing irrespective of the recovery pathway they take, but social factors may be influential in which pathways people take. Findings also indicate that recovery pathways involving mutual aid groups may confer longer term social connection benefits especially for people who may have complex AOD and mental health histories and who may be socially isolated during addiction.

Comment [DB1]: what is our evidence for this?

Introduction

It is generally recognised that there are multiple experiences of, and pathways to, recovery from alcohol and other drug (AOD) problems. Where recovery was once defined in narrow medical and professional terms in terms of changes to AOD use or remission from AOD problems, there is an increasing recognition of the value of and need for individuals to define 'recovery and what it means for them' (Best~~, D~~ et al. 2012, p. 336; Kelly~~, John Francis~~ & Hoeppner 2015; Valentine, 2011). There has also been an increased emphasis on wellbeing and community participation since the Betty Ford Institute Consensus Panel (2007) defined recovery as 'a voluntary sustained control over substance use which maximizes health and wellbeing and participation in the rights, roles and responsibilities of society' (Best~~t, DW~~ & Lubman 2012) (Also add Betty Ford reference p.6). The emphasis on wellbeing as a measure of recovery provides 'recognition that recovery from AOD problems is not just a matter of abstinence or symptom reduction but improvements in functioning, psychological well-being and QOL' (Kelly~~, John F.~~, Greene & Bergman 2018, p. 10). Where symptom reduction was traditionally the exclusive domain of treatment, improving wellbeing may involve treatment but it may also involve participation in mutual aid groups, or it might not involve treatment or mutual aid groups at all. Therefore, there is a need to explore the multiple pathways to recovery and wellbeing that people take, the characteristics of people who engage in particular pathways, and whether certain pathways results in better wellbeing than others.

Comment [VM2]: Should we not have the Australian definition?. "Recovery is a voluntary self-determined process toward minimisation or cessation of drug-related harms. This involves fostering healthy supported connections, such as with self, family, peers and community, and is premised upon fair access to pre-requisites for wellbeing." (ANEX, 2012).

Comment [VM3]: Focus?

The role of treatment in recovery

Previously, the recognised pathway to recovery was through a clinical model of treatment that positioned the afflicted individual as a client in need of professional intervention (Best, D et al. 2010). However, treatment has now been reconceptualised from the predominant mechanism through which recovery occurs to one of many pathways to facilitate recovery (Moos & Moos 2005, p. 345). This is not to suggest that treatment is not important, and indeed several studies highlight the positive impact of treatment on AOD use outcomes in particular (Kelly, PJ et al. 2018)(Teesson et al, 2008, 8, 15; McKetin et al, 2012, Manning et al, 2017). Researchers also emphasise the potentially valuable role that treatment may play

Comment [DB4]: this point has already been made

Comment [VM5]: not sure this is the right ref as it's a validation study for a satiation scale

Comment [SM6]: Also cite other outcome studies e.g. Patient Pathways, project MATCH, Combine, DTORS, ATOS, etc. INCLUDING PATIENT PATHWAYS AS THIS IS THE ONLY AUSTRALIAN OUTCOME STUDY LOOKING AT ALCOHOL

in stabilising individuals, ensuring urgent needs are met, and in facilitating the initiation of recovery (Best & Lubman, 2012). Given this, treatment may be important for particular groups of people.

Some research suggests that people who engage in treatment are more likely to have either had greater severity of AOD problems or less 'self-efficacy to refrain…' than individuals who do not obtain treatment or other help to resolve their AOD problems (Bischof et al. 2001; Moos & Moos 2005, p. 338; Russell et al. 2001; Weisner, Matzger & Kaskutas 2003). In addition to experiencing more severe AOD problems, those seeking treatment have been found to have limited social networks, interpersonal stressors and other complex psycho-social problems. This suggests the existence of a relationship between AOD problem severity and complexity, and the need for a professional treatment pathway (Bischof et al. 2001; Booth, Curran & Han 2004; Moos & Moos 2005; Weisner, Matzger & Kaskutas 2003), that involves case management as well as direct AOD treatment. However, not all AOD substance users may require or desire treatment and given high-rates of relapse after treatment (Finney et al., 1999; Jin et al., 1998; Vanderplasschen et al, 2014; Hser et al., 2001) some may need more than treatment to sustain recovery in the longer term (Moos & Moos 2005). For some people experiencing AOD problems, engagement with treatment may prove sufficient for facilitating a transition into stable recovery, whilst for others, professional treatment may provide a pathway to further engagement with recovery supports, such as mutual aid groups.

Role of Mutual Aid Groups

Whilst treatment has been found to 'confer ongoing health and social benefits', many studies have highlighted the role of mutual aid groups in helping people to achieve stable recovery in the longer term (Best~~, D~~ et al. 2013, p. 273; Humphreys & Moos 2001; Timko et al. 2000; White 2004). Most research on mutual aid group recovery pathways has focused on the abstinence based, peer-led 12-step mutual aid groups, such as Alcoholics Anonymous and Narcotics Anonymous. However, other promising mutual aid models ~~including~~ such as SMART recovery (which promotes a cognitive-behavioural approach to change) ~~continue to emerge~~ have grown considerably in recent years ~~and~~ but require further ~~exploration~~

Comment [DB7]: add something here about transitions to community and the duration of recovery journeys - ie the 5 year model from Betty Ford

Comment [DB8]: possibly add Kaskutas Review paper here

Comment [VM9]: could include this ref which shows others are as good
Zemore et al, 2018

"A longitudinal study of the comparative efficacy of Women for Sobriety, LifeRing, SMART Recovery, and 12-step groups for those with AUD"
https://www.journalofsubstanceabusetreatment.com/article/S0740-5472(17)30490-7/abstract

evaluation (Kelly~~, John F.~~ & White 2012, Kelly et al, 2016). Mutual aid and treatment have been identified as two separate therapeutic approaches, often characterised by mutual suspicion (Best~~, D~~ et al. 2010). However, mutual aid groups have served both to supplement treatment and act as a stand-alone informal, pathway to recovery (Best, D et al. 2010; Kelly, John F. & White 2012; Moos 2008). Despite the perception that mutual aid groups are akin to 'the blind leading the blind', engagement with peer-led, mutual aid groups has been found to 'boost abstinence self-efficacy and recovery coping skills; and… help individuals to maintain recovery motivation over time' (Kelly, John F. 2017, p. 931). Whilst the mechanisms of mutual aid group efficacy are not entirely understood, the social connectedness offered through these peer-based social networks is thought to be associated with improvements in wellbeing for those in recovery (Best, D et al. 2012; Moos 2008; Moos & Moos 2005). Mutual aid groups can provide those in recovery with the opportunity to engage in meaningful activities which significantly contributes to both wellbeing and QOL in recovery (Best et al., 2012., Kelly 2017).

Like those who seek treatment, those who seek help through mutual aid groups tend to experience greater AOD problem severity and have more complex psychosocial problems than those who do not seek help (Moos & Moos 2005). However, mutual aid groups may not be for everyone, and a number of barriers to attending 12-step mutual aid groups in particular have been noted. These include the focus on powerlessness, spirituality and abstinence orientation, which may not align with peoples goals, desires and beliefs (Best et al. 2010., Chick, 2017), and scepticism on the part of professionals .

Natural Recovery

While participation in treatment or mutual aid groups can have positive impacts in terms AOD use and wellbeing outcomes, recovery is also possible without accessing these pathways (Bischof et al. 2001; Moos & Moos 2005, 2006; Willenbring 2007). Less is known about the characteristics of people who engage in 'natural recovery', which for the purposes of this paper, has been defined as recovery without accessing treatment or mutual aid groups. ~~-~~Despite this, people who engage in natural recovery pathways have been found to

Comment [VM10]: Kelly, P et al (2016) From both sides: Participant and facilitator perceptions of SMART Recovery groups, DAR DOI: 10.1111/dar.12416

Comment [DB11]: can you please address the referencing issue

Comment [DB12]: and the Kelly paper you refer to above does provide an analysis of mechanisms of effective action

Comment [DB13]: cite our own paper here about mutual aid group involvement

Comment [VM14]:

Slutske, 2010 WHY IS NATURAL RECOVERY SO COMMON FOR ADDICTIVE DISORDERS? https://onlinelibrary.wiley.com/doi/full/10.1111/j.1360-0443.2010.03035.x Most common reasons for not seeking treatment were "thought should be strong enough to handle alone', 'thought the problem would get better by itself' and 'wanted to keep using medicine or drug'

Comment [VM15]: Most established evidence for natural recovery is NESARC so could add the below text

Evidence that natural recovery occurs comes from the 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) study where among participants identified as having alcohol dependence in the year prior to study intake, 27.3% were classified as being in partial remission; 11.8% were asymptomatic risk drinkers who demonstrated a pattern of drinking that put them at risk of relapse; 17.7% were low-risk drinkers; and 18.2% were abstainers and where only one-quarter had received treatment.

Comment [DB16]: why despite this?

experience lower AOD problem severity and stronger social resources, suggesting that their initial wellbeing indicators may have been greater than those who engage in treatment or mutual aid pathways to recovery (Moos & Moos 2005 also to be cited are Bischof, Russell, Turcker and Weisner).

Comment [DB17]: you should also cite the Granfeld and Cloud paper on natural recovery here

https://www.ncbi.nlm.nih.gov/pubmed/11693955

Comment [DB18]: this has been challenged by both John Cunningham and by Sobell and Sobell

Gaps and research questions

While the current literature reiterates that there are multiple pathways to recovery, less is known about the about the socio-demographic characteristics and AOD use histories of those who engage in different pathways to recovery and the relationship between recovery pathways and wellbeing. Previous research also tends to consider treatment and mutual aid in isolation, and tends to conceive of mutual aid quite narrowly in terms of 12-step groups only. This paper aims to address these gaps by exploring four recovery pathways reported in The Australian Life in Recovery Survey 2015 (ALIR): treatment only, mutual aid only (which included non-12-step as well as 12-step groups), AOD treatment and Mutual aid, and natural recovery. Specifically we sought to examine: 1) whether people who take specific recovery pathways have particular socio-demographic characteristics and histories of AOD use; and 2) whether specific recovery pathways are associated with better wellbeing for people established in their recovery.

Methods

The present study utilises data collected from the Australian Life in Recovery (ALIR) survey, which examined participants' experience of recovery from addiction. The ALIR study, which has previously been described by Bathish et al. (2017), was approved by the Eastern Health Human Research Ethics Committee (approval number: LR13/1314) and was conducted between November 2013 and July 2014.

Recruitment

The ALIR study had ~~a~~ broad inclusion criteria in order to capture diversity in recovery experiences and sought to attract participants who considered 'themselves in recovery or to have recovered from alcohol and/or other drug problems'. Participants for the ALIR survey were sought through local, regional and national networks in Australia. Online promotion

(social network sites and email lists) and word of mouth were used to seek participants from mutual aid and clinical recovery settings.

Participants

A total of 573 completed the 15-minute long ALIR survey. Most participants completed the survey online (58.3%), while 41.7% self-completed the survey in paper form. ~~The~~ Just over half~~majority~~ of participants were female (n=312, 54.6%), while the age of participants ranged from 15 to 76 (median 43.0 years). Over four-fifths of the sample were born in Australia (84.1%), with the remaining participants were born in the United Kingdom (7.4%), New Zealand (3.3%) or other countries (5.2%). Almost half of the sample reported described themselves as in a relationship (48.1%), ~~whilst~~ over two-thirds were employed (70.2%) and over two-fifths had a university degree or high qualification (41.1%).

The sample included participants who reported a number of primary substances of concern, including alcohol (66.0%), heroin or other street opioids (14.1%), methamphetamines (4.2%), cannabis (3.7%), cocaine (2.9%), pharmaceutical opioids (1.9%) or other amphetamine based substances (1.9%). Participants reported having used substances for between 1-47 years, with the average period of AOD use of 18.6 years (SD = 9.06) and an average period of 12.5 years (SD = 8.05) spent in 'active addiction.' The mean reported time of abstinence was 8.5 years (SD = 9.30) whilst average time reported in recovery was 9.3 years (SD = 9.23). The majority of participants reported having ever accessed specialist addiction treatment (69.8%) and having participated in a 12-step mutual aid group (91.6%) at some point in their lifetime, while 13.9% reported ever having attended a non-12 step mutual aid group, such as SMART recovery. At the time of participating in the survey, 83.5% of participants reported that they were currently attending a 12-step group, while 2.4% reported participating in a non-12--step mutual aid group at the time of the survey.

Comment [VM19]: the SDs are so large perhaps we should report the median and IQRs?

Measures

Drawing on an established approach used in various Life in Recovery projects (Best, 2015; Laudet, 2013; Laudet & Hill, 2015), the ALIR survey used measures to inquire about a range of life experiences relating to AOD use, service use, wellbeing, housing, engagement in meaningful activities, community participation, and citizenship. The survey asked people

retrospectively about whether these experiences occurred during active addiction and whether these same experiences occurred since they had been in recovery. In addition to demographic variables (e.g. age, sex, education and employment, mental health service use), the domains of interest for this article included recovery pathway, AOD use history, social factors and wellbeing.

Recovery pathway

As illustrated in Table 1, recovery pathway was determined by using binary (Yes/No) survey items that enquired about whether people had ever accessed AOD treatment (which included opiate substitution treatment, as well as community and residential treatments), and whether people had ever attended a mutual aid group (which included 12-step and/or non-12 step mutual aid group attendance).

Table 1: Recovery pathway determination

Pathway	Ever used AOD treatment	Ever attended mutual aid
1. Treatment only	Yes	No
2. Treatment & mutual aid	Yes	Yes
3. Mutual aid only	No	Yes
4. Natural recovery	No	No

Comment [DB20]: would it not be helpful to provide the numbers in each of these groups here?

Vic - YES, a reviewer is likely to ask for them

AOD use history

Items froorm the US Life in Recovery survey (Laudet, 2013), were used to measure AOD use history. These included primary drug of concern (alcohol only, drugs only or both alcohol and drugs) prior to entering recovery, number of years of AOD use, number of years in 'active addiction', and number of years of abstinence from the primary drug of concern.

Social factors

Given the increasing acknowledgment of the role of social factors in addiction and recovery (See Best et al., 2015), four types of social factors were measured with respect to peoples' time in 'active addiction' and 'in recovery'. These included 1) Number of important people in network, 2) Social network composition; 3) Group memberships; 4) Social identity.

Participants were asked "how many people did/do you discuss important things with?" to determine the number of important people on a scale of between one to five or more (1). To measure social network composition (2), participants were asked "how many of the people you spent/spend time with were/are problematic alcohol and/or drug users" from options ranging from 'none', 'less than half', 'about half', 'more than half' or 'all of them'. Likewise, participants were asked to identify the number of people in recovery in the social network using the same response scales.

In order to measure group memberships (3), a 2-item scale originally developed by Haslam et al. (2008) and adapted by Jetten et al. (2010) from the Exeter Identity Transition scales was used. This asked participants to rate their level of agreement on a scale from 1 (disagree completely) to 7 (agree completely) with the following statements: "I was/am a member of lots of social groups" and 'I had/have friends who were in lots of different social groups' on a scale from 1 (disagree completely) to 7 (agree completely). These scales have shown to be reliable in diverse samples (Iyer et al. 2009, Haslam et al 2008).

The social identity of participants (4) – in this case Identification with AOD users, and Identification with people in recovery – were measured using the single-item social identification measure (SISI) developed by Postmes, Haslam and Jans (2013); the validity of which has been shown across a broad range of social groups (Postmes et al. 2013). On the same 1-7 scale described above, participants were asked to rate their level of agreement with the following statements: 'I identify with other people in recovery' and 'I identify with other people who use drugs and alcohol'.

Wellbeing

The current wellbeing of participants was measured using three wellbeing items from the Australian Treatment Outcomes Profile (ATOP), which has a strong correlation with WHOQOL-BREF (Ryan et al., 2014). Participants were asked to rate their physical health, psychological health and overall quality of life in the past four weeks using an 11-point scale where 0 is poor and 10 is good.

Data Analysis

Data analysis was conducted using SPSS Version 21. This involved generating descriptive statistics and frequencies to describe the sample. Chi-squared tests and one-way ANOVAs were performed to explore demographic and social factor differences between the four recovery pathways groups (aim 1). In order to examine whether specific recovery pathways are associated with better wellbeing (aim 2), one-way ANOVAs in relation to each of three wellbeing measures was performed.

Comment [VM21]: Are we confident we can use parametric tests?, with those SDs its not normally distributed and so we probably ought to run with Kruskal–Wallis

Comment [MS22]: Given that recovery pathway was not associated with wellbeing and given that we want to avoid overlapping with the earlier ALIR paper led by Ramez (where we performed a regression analysis in which quality of life was the dependent variable and social factors were included as predictors), we have not included a regression analysis here (although interested to hear what others think about this).

Comment [DB23]: I think we need to say a bit more about Ramez's paper in the introduction - and then I agree!

Comment [MS24]: Any ideas about how to cut down tables. Could we just include the statistically significant variables? Maybe delete table 2?

Results

The most common recovery pathway in the ALIR sample was combined treatment and mutual aid (n=350, 67.6%), followed by mutual aid only (n=125, 24.1%), and natural recovery (n=27, 5.2%) while treatment only was the least common pathway (n=16, 3.1%).

Comparison of the socio-demographic and AOD use history characteristics in addiction ~~between~~ across different recovery pathways

As illustrated in Table 2, there were no statistically significant differences in demographic characteristics between the four recovery pathway groups.

Table 2: Comparison of demographic characteristics on different recovery pathways (Chi-square tests & ANOVAS)

Comment [MS25]: Have included both in tables (and haven't

Comment [VM26]: Add n's

	Treatment only	**Treatment & mutual aid**	**Mutual aid only**	**Natural recovery**	**Statistic**
Age (n=517)	44.2 (SD=11.7) Total: n=16	43.6 (SD=12.3) Total: n=349	45.3 (SD=13.0) Total: n=125	42.8 (SD=15.0) Total: n=27	F=0.6
Sex (n=516): Female	n=5 (31.3%) Total: n=16	n=193 (55.5%) Total: n=348	n=69 (55.2%) Total: n=125	n=15 (55.6%) Total: n=27	χ^2=10.0
Education level: Bachelor degree or above (n=514)	n=8 (53.3%) Total: n=15	n=138 (39.7%) Total: n=348	n=57 (46.0%) Total: n=124	n=13 (48.1%) Total: n=27	χ^2=2.7
Employed/studying	n=13 (86.7%)	n=254 (73.0%)	n=89 (72.4%)	n=24 (88.9%)	χ^2=2.7

Comment [DB27]: is this not significant?

Comment [VM28]: Not sure you can run an Anova with only 5 cases n = k+1 – though it meets the minimum number of 5

(n=513)	Total: n=15	Total: n=348	Total: n=123	Total: n=27	

*p<.05, **p<.01, ***p<.001

Similarly, there were no statistically significant differences between the four recovery pathway groups in the years of AOD use, years of active addiction, and years since last use, with all reporting relatively long AOD use and addiction careers in excess of 17 years. However, as illustrated in Table 3, a Chi-squared test revealed that there were statistically significant differences in primary drug of concern prior to entering recovery between the four recovery pathway groups. This indicated that the mutual aid only group and the combined AOD treatment and mutual aid only groups were more likely to have both drugs and alcohol as drugs of concern, while the AOD treatment only and natural recovery groups were more likely to be concerned about drugs only. Furthermore, the mutual aid only group and the combined AOD treatment and mutual aid only groups were more likely to have used mental health services before than the treatment only and natural recovery groups, although mental health service use was above 70% in each group.

Comment [DB29]: should we possibly add length of time in recovery to this table?

Comment [DB30]: that doesn't fit with the mean value reported above

Comment [VM31]: past year? Or lifetime?

Table 3: Comparison of the AOD use histories and mental health service use between different recovery pathways (Chi-square tests & ANOVAS)

	Treatment only	**Treatment & mutual aid**	**Mutual aid only**	**Natural recovery**	**Statistic**
PDOC (n=505)					χ^2=44.7***
Alcohol only	n=2 (12.5%)	n=112 (32.1%)	n=52 (44.4%)	n=10 (43.5%)	
Drugs only	n=7 (43.8%)	n=38 (10.9%)	n=4 (3.4%)	n=8 (34.8%)	
Both alcohol & other drugs	n=7 (43.8%)	n=199 (57.0%)	n=61 (52.1%)	n=5 (21.7%)	
	Total: n=16	Total: n=349	Total: n=117	Total: n=23	
Years of AOD use (n=508)	21.6 (SD=13.0) Total: n=15	18.9 (SD=8.8) Total: n=350	17.8 (SD=8.9) Total: n=121	19.6 (SD=10.5) Total: n=22	F=1.1
Year of active addiction (n=504)	10.5 (SD=9.0) Total: n=15	13.0 (SD=8.0) Total: n=346	11.3 (SD=7.5) Total: n=121	13 (SD=10.4) Total: n=23	F=1.9
Years since last use	6.7 (SD=9.4) Total: n=15	8.2 (SD=8.9) Total: n=348	9.9 (SD=10.5) Total: n=121	6.3 (SD=9.3) Total: n=21	F=1.6

Comment [VM32]: Add n's

(n=505)					
Mental health service use (n=518)	n=13 (81.3%) Total: n=16	n=326 (93.1%) Total: n=350	n=116 (92.8%) Total: n=125	n=20 (74.1%) Total: n=27	χ^2=14.4**

*p<.05, **p<.01, ***p<.001

Statistically significant differences were detected in ~~terms of particular~~ social factors ~~in addiction~~ (please see Table 4). In particular, mutual aid only and combined treatment and mutual aid groups tended to have lower endorsement with items about having multiple group memberships and having friends who were members of multiple different groups as compared to AOD treatment only and natural recovery groups. Thus, mutual aid only and combined treatment and mutual aid groups are likely to have been the least socially connected while experiencing addiction.

Table 4: Comparison of social factors in addiction of people on different recovery pathways (Chi-square tests & ANOVAS)

	Treatment only	**Treatment & mutual aid**	**Mutual aid only**	**Natural recovery**	**Statistic**
Number of important people (n=474)					χ^2=19.5
None	n=4 (28.6%)	n=130 (40.1%)	n=42 (36.2%)	n=6 (30.0%)	
One	n=3 (21.4%)	n=108 (33.3%)	n=38 (32.8%)	n=3 (15.0%)	
Two	n=2 (14.3%)	n=40 (12.3%)	n=16 (13.8%)	n=3 (17.6%)	
Three	n=2 (14.3%)	n=23 (7.1%)	n=11 (9.5%)	n=2 (10.0%)	
Four or more	n=3 (21.4%)	n=23 (7.1%)	n=9 (7.8%)	n=6 (30.0%)	
	Total: n=14	Total: n=324	Total: n=116	Total: n=20	
Proportion of users in network (n=476)					χ^2=15.6
None	n=2 (14.3%)	n=54 (16.6%)	n=17 (14.5%)	n=3 (16.0%)	
Less than half	n=1 (7.1%)	n=36 (11.1%)	n=21 (17.9%)	n=2 (12.6%)	
Half	n=4 (28.6%)	n=36 (11.1%)	n=15 (12.8%)	n=5 (25.0%)	
More than half	n=3 (21.4%)	n=111 (34.2%)	n=34 (29.1%)	n=9 (45.0%)	
All	n=4 (28.6%)	n=88 (27.1%)	n=30 (25.6%)	n=1 (5.0%)	

Comment [DB33]: I assume this means at the time of the survey, not ever??

Comment [DB34]: this should be framed in the discussion as evidence of social capital

Comment [VM35]: add n's

Comment [DB36]: although the numbers are low, this looks like an interesting effect on natural recovery

	Total: n=14	Total: n=325	Total: n=117	Total: n=20	
Proportion of people in recovery in network (n=475)					χ^2=22.4*
None	n=10 (71.4%)	n=288 (88.6%)	n=104 (89.7%)	n=18 (90.0%)	
Less than half	n=3 (21.4%)	n=32 (9.8%)	n=8 (6.9%)	n=1 (5.0%)	
Half	n=0 (0.0%)	n=2 (0.6%)	n=1 (0.9%)	n=1 (5.0%)	
More than half	n=0 (0.0%)	n=3 (0.9%)	n=1 (0.9%)	n=0 (0.0%)	
All	n=1 (7.1%)	n=0 (0%)	n=2 (1.7%)	n=0 (0.0%)	
	Total: n=14	Total: n=325	Total: n=116	Total: n=20	
Identification with AOD users (n=478)	6.00 (SD=2.1) Total: n=14	5.8 (SD=1.8) Total: n=328	6.1 (SD=1.8) Total: n=116	5.7 (SD=1.8) Total: n=20	F=0.7
Identification with people in recovery (n=480)	2.7 (SD=2.4) Total: n=14	2.1 (SD=1.8) Total: n=328	1.9 (SD=1.6) Total: n=118	2.4 (SD=1.7) Total: n=20	F=1.3
Member lots of different groups (n=478)	3.1 (SD=2.4) Total: n=14	2.0 (SD=1.6) Total: n=326	2.8 (SD=2.1) Total: n=118	3.1 (SD=1.9) Total: n=20	F=8.9***
Friends members of lots of different groups (n=477)	3.4 (SD=2.2) Total: n=14	2.7 (SD=2.0) Total: n=326	3.3 (SD=2.2) Total: n=117	3.5 (SD=2.0) Total: n=20	F=3.2*

*p<.05, **p<.01, ***p<.001

Comment [DB37]: this is also interesting - natural recovery group has no links with user networks

Comparison of social and identity factors in recovery between different recovery pathways

Since being in recovery ~~however~~, mutual aid only and combined treatment and mutual aid pathway groups were the most likely to report having more important people in their life, describing themselves as being in recovery as compared to the treatment only or natural recovery groups. Similarly, mutual aid only and combined treatment and mutual aid pathway groups were more likely to have social networks consisting of a greater proportion of people in recovery and fewer AOD users as compared to the treatment only or natural recovery groups (please see Table 5).

Table 5: Associations between recovery pathways and social factors in recovery (Chi-square tests & ANOVAS)

	Treatment only	Treatment & mutual aid	Mutual aid only	Natural recovery	Stat
Number of important people (n=450)					χ^2=43.7***
None	n=1 (7.1%)	n=5 (1.6%)	n=0 (0.0%)	n=3 (17.6%)	
One	n=0 (0.0%)	n=5 (1.6%)	n=5 (4.4%)	n=1 (5.9%)	
Two	n=2 (14.3%)	n=15 (4.9%)	n=5 (4.4%)	n=3 (17.6%)	
Three	n=3 (21.4%)	n=70 (22.9%)	n=35 (31.0%)	n=0 (0.0%)	
Four or more	n=8 (57.1%)	n=211 (69.0%)	n=68 (68.0%)	n=10 (58.8%)	
	Total: n=14	Total: n=306	Total: n=113	Total: n=17	
Proportion of users in network (n=451)					χ^2=43.2***
None	n=8 (57.1%)	n=143 (46.6%)	n=52 (46.0%)	n=7 (41.2%)	
Less than half	n=3 (21.4%)	n=136 (44.3%)	n=52 (46.0%)	n=3 (17.6%)	
Half	n=2 (14.3%)	n=12 (3.9%)	n=4 (12.8%)	n=1 (5.9%)	
More than half	n=1 (7.1%)	n=12 (3.9%)	n=3 (2.7%)	n=6 (35.3%)	
All	n=0 (0.0%)	n=4 (1.3%)	n=2 (1.8%)	n=0 (0.0%)	
	Total: n=14	Total: n=307	Total: n=113	Total: n=17	
Proportion of people in recovery in network (n=447)					χ^2=83.5***
None	n=5 (35.7%)	n=19 (6.3%)	n=4 (3.6%)	n=5 (29.4%)	
Less than half	n=3 (21.4%)	n=22 (7.2%)	n=7 (6.3%)	n=9 (52.9%)	
Half	n=1 (7.1%)	n=31 (10.2%)	n=13 (11.6%)	n=1 (5.9%)	
More than half	n=1 (7.1%)	n=116 (38.2%)	n=46 (41.1%)	n=2 (11.8%)	
All	n=4 (28.6%)	n=116 (38.2%)	n=42 (37.5%)	n=0 (0.0%)	
	Total: n=14	Total: n=304	Total: n=112	Total: n=27	
Identification with AOD users (n=453)	5.3 (SD=2.2) Total: n=14	6.0 (SD=1.7) Total: n=308	6.2 (SD=1.7) Total: n=114	5.4 (SD=1.6) Total: n=17	F=1.8
Identification with people in recovery	5.1 (SD=2.1) Total: n=14	6.6 (SD=0.9) Total: n=304	6.7 (SD=0.9) Total: n=114	4.5 (SD=2.0) Total: n=17	F=32.2***

Comment [DB38]: I think the numbers are too small for this analysis

Vic – or could we increase power by collapsing groups so we are comparing NONE versus 1-3 versus 4+ ?

Comment [DB39]: this is an interesting and important mutual aid effect - about ongoing engagement with other people in recovery

Comment [DB40]: again this is an important mutual aid + identity effect

(n=449)					
Descriptor (n=481) In recovery Recovered In medication assisted recovery	 n=5 (41.7%) n=5 (41.7%) n=2 (16.7%) Total: n=12	 n=287 (84.9%) n=31 (9.2%) n=20 (5.9%) Total: n=338	 n=106 (92.2%) n=9 (7.8%) n=0 (0%) Total: n=115	 n=9 (56.3%) n=6 (37.5%) n=1 (6.3%) Total: n=16	χ^2=38.3***
Member lots of different groups (n=453)	4.4 (SD=1.6) Total: n=14	1.7 (SD=1.8) Total: n=308	5.0 (SD=1.8) Total: n=114	5.5 (SD=1.9) Total: n=17	F=2.3
Friends members of lots of different groups (n=451)	4.9 (SD=1.3) Total: n=14	5.2 (SD=1.6) Total: n=307	5.6 (SD=1.3) Total: n=113	5.7 (SD=1.7) Total: n=17	F=2.3

*p<.05, **p<.01, ***p<.001

Wellbeing and recovery pathways

As illustrated in Table 6, people in all pathway groups reported high wellbeing at the time of the survey and there were no statistically significant differences in wellbeing measures between groups.

Table 6: Associations between recovery pathways and current wellbeing measures (ANOVAs)

	Treatment only	**Treatment & mutual aid**	**Mutual aid only**	**Natural recovery**	**Statistic**
Physical health (n=516)	7.3 (SD=1.9) Total: n=16	7.2 (SD=1.8) Total: n=348	6.8 (SD=2.1) Total: n=125	6.7 (SD=2.3) Total: n=27	F=1.5
Psychological health (n=509)	6.6 (SD=2.5) Total: n=16	6.5 (SD=2.3) Total: n=343	6.3 (SD=2.4) Total: n=123	5.8 (SD=2.9) Total: n=27	F=0.8
Quality of life (n=515)	7.2 (SD=1.6) Total: n=16	7.0 (SD=2.1) Total: n=348	6.6 (SD=2.3) Total: n=124	6.3 (SD=2.5) Total: n=27	F=1.7

*p<.05, **p<.01, ***p<.001

Discussion and conclusion

This study sought to explore whether people who take specific recovery pathways have particular socio-demographic characteristics and histories of AOD use and whether specific recovery pathways conferred greater wellbeing benefits. The findings demonstrate that people in recovery tend to experience high wellbeing irrespective of the recovery pathway

Comment [MS41]: Would be useful to compare our findings with the existing literature a little more.

Any further thoughts/edits here would also be really useful.

they take. This reiterates that there are many pathways to recovery and that wellbeing in recovery is not dependent on the pathway to recovery, but rather being in recovery, and that these pathways are largely unrelated to personal demographics.

Social factors appeared to play an important role in influencing which recovery pathway people took. Whilst both the primary drug of concern and previous use of mental health services were ~~predictors~~ associated with ~~of~~ all help seeking pathways, no other demographic or AOD use ~~were associated~~ determined which recovery pathways people had taken~~selected~~. Those who reported higher levels of positive social factors, specifically, number of social connections or group membership during active addiction, were more likely to experience a natural recovery pathway or a treatment--only pathway. In contrast, those who reported lower identification with or participation in groups or less social connections were more likely to access either mutual aid or both AOD treatment and mutual aid as their pathway to recovery, but more people in their networks who were in recovery. These findings indicate the significance of social support and connectedness (or lack thereof) as a factor influencing recovery pathways and potentially reiterates the important function of mutual aid groups for those who are socially isolated whilst in active addiction.

Comment [DB42]: this is probably related to social capital

Comment [DB43]: talk about the literature here on recovery and social connections

Indeed findings indicate that recovery pathways involving mutual aid groups may confer longer-term social connection benefits especially for people who may have complex AOD and mental health histories or who may be socially isolated during addiction. Consistent with research on the social benefits of mutual aid groups ( ), recovery pathways that included participation in mutual aid groups were found to be associated with higher levels of social connectedness and supportive social networks, this was particularly significant given that these participants reported lower levels of social connectedness during active addiction. Given the social support and access to resources that social connection can confer (Holt-Lunstad et al.,) , there may be greater need for vigilance in recovery for those who engaged in treatment only or pursue a natural recovery pathway as recovery may create a depletion in their social networks.

Comment [VM44]: probably better, more recent refs otherwise Humphreys, 1997; Banks 1997

Para 4: Limitations (refer to Ramez's paper)

Comment [MS45]: Need to include this.

- Self-report
- Online survey and Self-selected pathway (not randomly assigned)
- Recall issues
- Small sample of people in natural recovery
- Over-representation of people who had used mutual aid groups and under-representation of treatment only and natural recovery groups.
- Classification into four pathways might obscure a greater complexity of pathways (and combinations of recovery supports).
- Association doesn't give us an indication of direction

The findings of this study suggest that no pathway to recovery is clearly 'better' than others and therefore treatment and recovery systems need to offer multiple pathways to recovery so that people can take the pathway that suits them best. Nonetheless there was a clear benefit among those with low social capital during active addiction from engaging in MA in terms of existing within a supportive network which may contributed to/bolstered their well-being. An implication of the findings are that addiction and other health and welfare services should aim to promote and facilitate engagement in mutual aid for clients who have a high proportion of people using AOD in their social networks. Furthermore, this study highlights the need to advocate for recovery and wellbeing as opposed to a particular pathway towards achieving recovery.

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Comment [MS46]: Need to finalise rand format eference list and tidy up in-text references.

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