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Social group membership before treatment for substance dependence predicts early  
identification and engagement with treatment communities

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## **Abstract**

Social relationships play a major role in recovery from substance dependence. To date, greater attention has been paid to the role of important individuals in a person's life and their contribution to recovery following treatment. This study is the first to examine both individual and wider group-based social connections in the lead up to residential treatment for substance misuse in a therapeutic community (TC), and their influence both on a person's readiness to engage with the treatment community and with a recovery pathway. Participants were 307 adults interviewed early in treatment about their individual- and group-based social relationships prior to treatment entry, their social identification with the TC, as 'a user' and a person 'in recovery', their current recovery capital and quality of life. Correlational analysis showed that only pre-treatment group-based, and not individual, relationships, were significantly associated with developing social identification with the TC early in treatment. Moreover, results of hierarchical regression analyses indicated that identification with the TC was best predicted by the extent to which they saw themselves as being in recovery. Finally, mediation analysis indicated that TC identification was the mechanism through which social group memberships prior to treatment commencement protected quality of life in the early phases of treatment. These findings highlight the protective role that group memberships play in building early identification with the TC and supporting well-being in a critical period of transitioning to treatment.

Keywords: substance dependence, social identity, recovery identity, therapeutic  
community



## Introduction

A body of research shows that people who are more socially connected are generally healthier and happier (e.g., Holt-Lunstad et al., 2010; Jetten et al., 2012; Sani et al., 2015). Nevertheless, social relationships are not an unalloyed good and there are clearly contexts in which they have negative influences on health and well-being (see Haslam et al., 2012). People dependent on drugs and alcohol, for example, may experience some peers as reinforcing ongoing use and promoting harmful health behavior (Best, Haslam, et al., 2016; Day et al., 2013). Consistent with this point, data show that greater social engagement with others who use substances is associated with increased personal use and poor motivation to cease (Moshier et al., 2012). Ceasing engagement with substance using peers is clearly challenging, but the evidence shows that following this path whilst increasing engagement in social networks supportive of recovery can result in longer recovery maintenance (Frings & Albery, 2015) and better quality of life (Best et al., 2012).

As these studies attest, there is no doubt that a person's social networks, both with significant individuals and with groups of others, play an important role in recovery from substance misuse. However, an important question remains — do social relationships in the *lead up to* treatment impact on the extent to which a person engages with treatment to support their recovery goals and, if so, how? As yet, no studies have examined how one's social connectedness in the period prior to commencing treatment affects their readiness to engage with others in a treatment community to pursue common recovery goals, and this is the question that the present research addresses.

The notion of 'recovery readiness' is not new to treatment for substance misuse, but it has mainly been considered in the context of working with stages of change in treatment and recovery (e.g., as in the Transtheoretical Model of behavior change, DiClemente & Prochaska, 1998). In these contexts, 'readiness' is conceptualized in motivational terms and

characterized by an individual's openness or willingness to engage in particular behaviors that support recovery, which can be reflected in one's generic motivation to pursue change or through one's motivation to engage in specific forms of treatment (DiClemente, Schlundt & Gemmel, 2004; Melnick, Hawke & de Leon, 2014).

In the present paper we expand on this conceptualisation of readiness to include one's motivation to engage with others in treatment — relationships that we have noted above positively influence recovery trajectories and are recognized as a key ingredient in the community-as-method approach (De Leon, 2000). The early period of treatment in particular, is critical in light of research showing that at least 17% of people admitted to residential treatment leave in the first week and 35% leave within the first month (see Perryman & Dingle, 2015). As treatment retention is a recognized predictor of outcomes (e.g., Brorson, Arnevik Rand-Hendriksen & Dickert, 2013; Vanderplasschen et al., 2013), we need to understand all the factors that influence length of stay. Here we focus on one factor that has received relatively little attention to date in the addiction literature — the role that group based social relationships in *the lead up to* residential treatment plays in a person's readiness to engage with that treatment community.

### **Social identification and substance dependence**

While researchers recognize the importance of social relationships in substance dependence, there is increasing interest in the particular role played by the social groups that we belong to — whether they be family, friendship, interest, using, or other groups. Recent development of the *Social Identity Approach to Health* (C. Haslam, et al., 2018; S. A. Haslam et al., 2009; Jetten et al., 2012) has helped to account for group influence and it does so by drawing on two established theories of group process and intergroup relations: notably, Social Identity Theory (Tajfel and Turner, 1979) and Self-categorization Theory (Turner et al., 1987). This approach recognizes that the self is not only comprised of attributes that are unique to an individual (i.e., the sense of “I” or “me”), but also those

attributes that they share with others in the social groups they belong to (i.e., the sense of “we” and “us”, for example, as *us* Liverpool supporters, *us* women or *us* smokers). When these social groups are internalized — to form part of a person’s social identity —they have the power to influence the person's thoughts, feelings and behavior; affecting what they think, say and do. Importantly, group influence has a profound impact on health, affecting behavior in both helpful ways (e.g., through offering a means to access various forms of support), but also in potentially harmful ways (e.g., by reinforcing and facilitating substance misuse). When social identification is a source of positive influence and support, as is common among groups that promote recovery, then it serves as a psychological and practical resource that people can draw strength from when trying to meet recovery goals. Moreover, when groups supporting recovery are multiple, then this provides increased access to such support to further reinforce recovery goals. Evidence in support of the importance of multiple group membership is developing in the substance misuse literature (e.g., Dingle, Cruwys & Frings, 2015), but is already well established in the wider health and well-being literature, with data showing that membership of multiple groups enhances recovery from stroke (Haslam et al., 2008), physical health and resilience (Jones & Jetten, 2011; Sani et al., 2015), and mental health and well-being (Cruwys et al., 2013; Jetten et al, 2015; Johnstone, Jetten, Parsell, Dingle, & Walter, 2016).

These ideas have been elaborated further in two models that speak directly to the contribution that social identity processes make to recovery from substance dependence — the Social Identity Model of Cessation Maintenance (SIMCM; Frings & Albery, 2015) and the Social Identity Model of Recovery (SIMOR; Best, Beckwith, et al., 2016). Both models see social identity change as key to recovery, though they emphasise different aspects of identity in the transition. SIMCM focuses on the role of recovery groups in understanding the transition from active addiction to recovery from addiction (Frings & Albery, 2015; Frings et al., 2016). SIMOR builds on this to consider the wider social

context in which recovery occurs, recognizing the influence of *all* social groups in shaping recovery trajectories — irrespective of their using or non-using status or their nature as a formal or informal support group (Best, Beckwith, et al., 2016). Key to this model is the balance of a person's social group memberships and the importance of those supporting recovery being multiple and more strongly represented to achieve recovery goals.

This process of identity change is difficult to traverse, and both models recognise that recovery groups, like Alcoholics Anonymous and the therapeutic community (TC), can be central to this goal. But these communities are only useful to the extent that people see them as positive and supportive (not exclusionary or punitive, see Weston, Honor & Best, 2018) to enable engagement with people in those groups. Moreover, it is group identification, and not just contact, that is argued to provide the basis for how groups influence health in general (e.g., Sani et al., 2012) and addiction outcomes more specifically (e.g., Dingle, Cruwys & Frings, 2015). But what determines identification with the community in the early phases of treatment?

The above models draw on self-categorization principles to explain when a person will identify with, or self-categorize as belonging to, a particular social group (e.g., as *us* members of a therapeutic community). Key for our purposes is self-categorization theory's principle of perceiver readiness — or a person's predisposition to use a social identity as the basis for self-definition. Here it is argued that it is more likely for a person to self-categorize and identify as a member of a particular group (e.g., with the TC) when that identity is more accessible to them through previous experience of the group (e.g., through previous TC admissions) and their motivations and goals are in line with those of the group (i.e., to be supported to pursue recovery and see recovery as central to oneself through treatment; see Oakes, 1987; Oakes et al., 1994). A question we examine in this study is whether evidence of such accessibility predicts readiness to engage with the treatment community, as indexed by early identification with the TC.



Identification with the TC is important for a number of reasons, not least because research has found it to be a key driver in helping people move away from the groups and identities that support their substance misuse (Beckwith et al, 2015; Dingle, Stark et al., 2015). As this research suggests, TC identification may operate as a mechanism through which to support recovery. Alongside this, research from the social identity tradition has shown that people's group memberships in the lead up to any life change (as is the case when deciding to engage in addiction treatment) provides a platform for people to retain meaningful existing groups but also to extend their network by joining new groups. These new and existing groups have been found to function as important protective mechanisms that help people adjust to life change (e.g., Haslam et al., 2008; Iyer et al., 2009; Seymour-Smith et al., 2017). According to this reasoning, the more groups a person belongs prior to a life change the more likely they can engage these protective mechanisms to help them counter any negative effects associated with life change. Applying this to the present context, multiple group memberships in the lead up to treatment for substance misuse could support a person's well-being through providing a basis for them to develop or strengthen their sense of identification with the TC. In other words, TC identification might function as the means through which people's groups prior to treatment support their well-being and potential for recovery. We test these relationships in the mediation model proposed in Figure 1.

---Figure 1 about here ---

### **Present study**

The present study examines a notable gap in the literature on substance dependence — the influence that people's social relationships in the lead up to treatment have on readiness to engage with a residential community to support recovery. We address this gap in two ways. First, we investigate the contribution that the relationships one has with individuals (as measured using the Important People Drug and Alcohol Interview, Zywiak

et al., 2009) and with social groups prior to commencing treatment make to recovery potential in the early phase of treatment. Drawing on the social identity approach we predict that multiple group memberships will be particularly important, with more group memberships associated with increased potential for recovery as indexed through better quality of life and greater recovery capital (Hypothesis 1, H1). Recovery capital, in particular, is recognized as a strong predictor of treatment outcomes. Those who have greater recovery capital (e.g., social, physical resources) are better able to manage their substance use and its consequences and are more likely to sustain recovery (Granfield & Cloud, 2001; Groshkova, Best, & White, 2013; Laudet & White, 2008). Both life quality and recovery capital are used here only as indicators of recovery potential, in light of our focus on treatment entry and early engagement with the TC; not longer-term outcomes.

Second, we test theoretical predictions about what determines readiness for early engagement with the treatment community, as indexed by identification with that community. Here, we predict that the number of previous TC admissions and recovery centrality will predict identification with the TC (H2). Finally, in line with both social identity theorizing and previous research showing the TC is an important vehicle for recovery, we predict that TC identification will mediate the relationship between multiple group memberships and recovery potential as indexed through quality of life and perceptions of recovery capital (H3).

## **Method**

### **Participants**

Participants were eligible for the study if they were adults who had recently entered a therapeutic community (TC) to address their dependence to alcohol and/or other drugs. A total of 307 participants were recruited from five TCs operating in three states of Australia: Queensland (n=109), New South Wales (n=44) and Victoria (n=154). All TCs were members of the Australasian Therapeutic Communities Association (ATCA), mainly

offering a combination of group intervention, group activities, recreation, and case management, within a milieu where TC living is regarded as 'community as method' (De Leon, 2000). In addition to having recently commenced residential treatment for drug dependence (mean days since admission = 22.8 days,  $SD=12.3$ ), participants were required to be at least 18 years of age, have no active psychotic disorders, and be able to speak English to be included in the study. TC staff identified residents who met these criteria and offered them the opportunity to participate.

Relevant demographic and background information for this sample are provided in Table 1. The mean age of participants was 34.7 years ( $SD=9.1$ , range=18-66) and most were male ( $n=209$ ) and Australian born (89.6%). Previous admission to the TC was not an exclusionary criterion, and while this was the first admission for the majority of participants (61.2%), some had up to five previous admissions (mean admissions=0.58,  $SD=1.03$ ). Most were unemployed and had lived with family prior to admission. The main primary substances of concern were methamphetamines (38.1%), alcohol (32.9%) and heroin (17.2%). Comparing these demographics with those available from the most recent and largest published Australian TC study (Darke, Campbell & Popple, 2012), shows that our sample comprised participants who were similar in age, gender, and unemployment levels, but who had fewer dependent children, fewer admissions to prison, and more episodes of previous treatment.

---Table 1 about here ---

## **Measures**

Demographic variables comprised age, gender, and years of education. Additional measures were used to index the number of social relationships, social identification, as well as recovery potential, and addiction severity and duration.

### **Number of social relationships.**

*Group memberships.* This was taken from the group listing component of the

Exeter Identity Transition Scales (Haslam et al., 2008). Participants were asked to list up to 6 social groups they belonged to in the six months before TC entry. They were told that these groups could take any form and be of any size, but should contain at least two other people in addition to the participant. The groups listed were diverse and varied markedly between respondents. Groups included family, friendship, church, Alcoholics/Narcotics Anonymous, substance using groups, Facebook communities, Aboriginal community, bikies, chess club, Salvation Army, and specific therapeutic communities. The total number of groups listed was used in analysis.

***Individual relationships.*** As part of the Important People Drug and Alcohol Interview (IPDA; Zywiak et al., 2009), participants were asked to list up to 10 people, over the age of 12, whom they considered important to them in the six months prior to entering the TC. These were summed to provide the total number of important individual relationships.

**Social identification.**

***Therapeutic Community Identity.*** This scale comprised four items adapted from Doosje et al. (1995) and used previously in addiction research (e.g., Dingle, Stark et al., 2015). These items indexed participants' sense of connectedness to the TC (e.g., 'I identify with other members of the [particular TC]') and had good internal reliability ( $\alpha = .71$ ). Participants rated each item on a 7-point scale (1=strongly disagree, 7=strongly agree). The average of these four items was used in analysis, with higher scores indicating a stronger sense of identification with the TC.

**Perceiver readiness.**

Two measures indexed perceiver readiness: identity centrality and the number of previous TC admissions.

***Identity Centrality.*** Two separate items measured identity centrality. The first, recovery centrality, captured the extent to which people felt that recovery was central to

their self-definition (i.e., ‘Being in recovery is a central part of who I am’) and the second, user centrality, measured the extent to which being a substance user was central to self-definition (i.e., ‘Being a drug user/drinker is a central part of who I am’). Both are highly relevant aspects of self-identification used in previous research with substance using populations (Buckingham et al., 2013). They were rated on the same 7-point scale described above, with higher scores indicating stronger recovery centrality, and entered separately into analysis.

***Previous TC admissions.*** This was the sum of previous admissions that people had to a TC, which ranged from 0 to 5.

### **Recovery potential.**

Two measures were used to gauge a person’s potential for recovery in the early following admission: recovery capital and quality of life.

***Assessment of Recovery Capital Scale*** (ARC,  $\alpha = .92$ ). This scale was developed by Groshkova and colleagues, measuring recovery capital across ten domains (i.e., substance use and sobriety, global psychological health, global physical health, citizenship and community involvement, social support, meaningful activities, housing and safety, risk taking, coping and life functioning, and recovery experience; Groshkova et al., 2013). It comprised 50 statements, tapping into the resources and coping strategies that might help people to initiate and maintain recovery, and participants were asked whether they agreed or disagreed with each. The total number of “agree” statements was summed with a higher score indicating greater recovery capital.

***Quality of Life.*** This was measured with the single item from the Australian Treatment Outcomes Profile (Ryan et al., 2014; ‘How would you rate your quality of life in the past four weeks?’) on a 10-point rating scale (0=poor, 10=good).

**Severity of substance use.** Two measures, substance use frequency and duration, were used to index addiction severity, and were included as control variables in analyses.

**Frequency.** This was defined as the number of days a person's primary drug of concern (PDOC) was used in the previous month. The PDOC could fall in one of seven categories that comprised methamphetamines, benzodiazepines, cocaine, alcohol, heroin, cannabis, other opioids, or other drugs (as listed in Table 1).

**Duration.** This was defined as the number of years since use of the PDOC was first identified as either problematic or needed. For this, we took the response to the question "How old were you when your use of this substance first became problematic or you felt you needed it" and subtracted this from participants' current age.

### **Procedure**

After consenting to participate in the study, participants completed the above measures as part of larger interview battery, which lasted 60 to 90 minutes. On completion, participants were debriefed and reimbursed with a AU\$30 store voucher for their time. Ethical approval for the study was provided by the Eastern Health and University Human Research Ethics Committees. Interviews were conducted between September 2014 and December 2015.

### **Data analysis strategy**

Correlational analysis was used to examine the contribution that the number of individual- and group-based relationships in the lead up to treatment made to recovery potential (i.e., H1). Hierarchical regression was then used to test H2, examining the influence that the theoretically-derived social identity principle of perceiver readiness had on developing TC identification. For this analysis, all variables were mean centred, with the exception of gender (which was already dummy coded). Demographic variables (i.e., gender, age and education) in addition to severity and duration of substance misuse were entered in Step 1. The number of TC admissions, recovery centrality and user centrality were then entered in Step 2. Finally, mediation analysis was used to examine the role of TC identification as the mechanism through which social relationships support recovery

potential. This was conducted using AMOS (Version 22) for which listwise deletion was used to deal with missing data. Confidence intervals were estimated using 10,000 bootstrap samples and bias-corrected confidence intervals were used to obtain the significance values reported.

## **Results**

The proportion of missing data was low for this sample and only present for age (0.3%), previous TC admissions (6.8%), ARC (3.9%), quality of life (0.7%), severity of drug use (11.7%) and duration of substance misuse (9.4%). Means and standard deviations for measures as a function of age (younger or older based on median split), gender and Indigenous heritage are provided in Table 2. These show that the mean data across these categories were similar with only some exceptions. Notably, participants identifying as Indigenous had fewer important individual relationships, fewer previous TC admissions, and indicated that the severity and duration of their substance misuse was less than that of the remaining sample. Unsurprisingly, respondents in the younger age category had fewer TC admissions and years of problematic substance use.

---Table 2 about here ---

The means, standard deviations and inter-correlations across the entire sample for all measures are provided in Table 3. These data show that people had used their primary drug of concern for an average of 19 days in the past month and that it was 12 years on average since their use had become problematic. For social relationships, participants identified an average of three social groups and five individual relationships. Strength of identification with the TC was moderate, as was user identity centrality. Recovery identity centrality was stronger than both, indicating that this was more important than either TC identification or user centrality to people's self-definition early in treatment. On measures of recovery potential, the recovery capital people perceived they had was moderate and comparable to that reported in a previous study involving people participating in

community rehabilitation (Groshkova et al., 2013). Mean quality of life was just below the midpoint of the scale.

---Table 3 about here ---

### **Correlational analysis.**

A moderate positive relationship was found between the number of individual and group-based relationships as might be expected, indicating that people who had more relationships with individuals also belonged to more social groups. However, only the number of social group memberships was significantly correlated with recovery potential and only with quality of life, providing partial support for H1. Interesting too was the fact that only the number of group memberships was associated with TC identification. Thus, the more groups that people belonged to, the better their quality of life and the greater their strength of identification with the TC. Among the centrality measures, it was only recovery centrality that was associated with TC identification. Together these associations show that early in treatment those with greater perceived recovery capital had better quality of life, and were more strongly identified as a person in recovery and as a member of the treatment community.

As might be expected, more frequent substance use was associated with a stronger perception that being a user was central to self-definition and less recovery capital indexed by the ARC. What was unexpected was the failure to find any association between the ARC and either social relationship type. For this reason, the ARC was not included as a dependent measure in testing our mediation model, and this is a point that we return to in the Discussion.

### **Regression analysis.**

Results of hierarchical regression, assessing whether the self-categorization principle of perceiver readiness (indexed using previous TC admissions, user and recovery centrality) predicted readiness to engage with the treatment community (indexed using TC



identification), are summarised in Table 4. About 7% of the variance in TC identification was explained by the measures entered at Step 1, with education ( $\beta = -.21, p < .01$ ) the only significant individual predictor,  $F(5, 249)=2.60, p=.026$ . When the measures of perceiver readiness were entered in Step 2, recovery centrality ( $\beta = .52, p < .001$ ) emerged as the sole predictor of TC identification ( $\Delta R^2 = 0.25, F[2, 241] = 15.30, p < .001$ ). This final model explained 25% of the variance in TC identification. This suggests that the more ‘being in recovery’ was perceived as central to a person’s identity early in treatment, the more they identified with the TC. These data provide mixed support for H2 with evidence that recovery centrality, but not previous TC admissions, predicted early engagement with the treatment community.

---Table 4 about here ---

### **Mediation Analysis.**

This analysis tested the relationship between pre-treatment group membership and quality of life as mediated by TC identification, controlling for substance dependence severity and duration. Values for skewness and kurtosis for all variables used were within the acceptable range to meet assumptions of normality (between -0.88 and 1.22). Results are illustrated in Figure 2. Goodness-of-fit indicators revealed that the model provided an excellent fit to the data,  $\chi^2(2, n=248)=1.94, p=.379, \chi^2/df=.97$ ; CFI=1.00; RMSEA<.001; SRMR=.03. Consistent with H3, as the number of group memberships in the 6-month period before treatment increased, so too did TC identification, and as TC identification increased, so too did quality of life early in treatment. Moreover, TC identification fully mediated the relationship between group memberships and quality of life. Thus, group membership provided an important basis from which to develop identification with the TC and this sense of connectedness to the treatment community was an important means through which quality of life was supported.

Controlling for frequency and duration of substance use did not alter the findings.

Additionally, while testing alternative pathways is common to interrogate directionality in relationships, this did not make sense for this model on temporal grounds, given group membership focused on the period before entering the community and TC identification and quality of life were measured within three weeks of entry.

---Figure 2 about here ---

## **Discussion**

In this paper, we investigated the contribution that different types of social relationships in the period prior to residential treatment made to engagement with the treatment community and recovery potential. When considering both the number of individual- and group-based relationships, only the latter was associated with TC identification and quality of life, providing partial support for H1. Partial support was also found for H2, with regression analysis showing that the best predictor of early identification with the TC was the extent to which people believed that being in recovery was central to their identity. Finally, and consistent with H3, group memberships enhanced quality of life early in treatment because they provided a basis for people to develop a sense of connectedness with the TC. These results show that TC identification functioned as one mechanism through which quality of life was supported in the early stages of treatment, with treatment group identification in this context functioning as a positive form of influence.

Our findings highlight the particular importance of social groups as a platform from which to extend one's social identity network to include the TC early in treatment. This suggests that in the lead up to entering residential treatment, it is people's group-based social resources that appear most relevant to connecting with the TC, which itself functions as a resource to protect quality of life when managing the challenges of engaging with the treatment community. Importantly, this does not mean that individual relationships are irrelevant and, on this point, we certainly found that people with more

individual relationships had more group memberships. Rather, as the present findings imply, it may be that different forms of social connectedness affect recovery outcomes in different ways during the journey. At least in the early phase of treatment, it appears that group memberships are a better resource to scaffold development of a sense of belonging with a treatment community (e.g., Best and Laudet, 2010), which for the majority of study respondents represented a new social identity. Knowing which relationships to foster and strengthen early in treatment may be key to optimising outcomes. Along these lines, an important implication of the present study is the need to put resources towards helping people develop their social group memberships both in the lead up to treatment and in the early period after admission. Clearly such investment is easier when people are actually in treatment, but as our results show finding ways to work with people to prepare them for the treatment transition is likely to further enhance treatment engagement and recovery potential.

Results of correlational analysis also pointed to the importance of TC identification in supporting quality of life and recovery capital in treatment. This is consistent with a number of studies highlighting how vital identification with the treatment community is to recovery outcomes (Beckwith et al., 2015; Dingle, Stark, et al., 2015; Vanderplasschen et al., 2013), but here it is demonstrated at the commencement of treatment. As a key predictor, it is clearly important to understand what determines identification with the TC early in treatment to optimise recovery potential. To this end, we examined the contribution that perceiver readiness made to TC identification. We predicted that both the number of previous TC admissions (as an index of a person's predisposition to use the TC identity previously) and identity centrality (as a user or in recovery) would both predict early identification with the TC. However, the only significant individual predictor was recovery centrality. Those who felt that being in recovery was central to their self-definition showed stronger early identification with the TC.

This certainly highlights the importance of helping people to develop and embed this aspect of the self ‘in recovery’ as early as possible in treatment. This might be achieved through encouraging greater exposure to others in recovery at an early stage in their recovery journey, as promoted in 12-step programs, but also in raising people’s awareness that residential treatment’s goal is to support them to increase the salience of this identity relative to others that might undermine recovery (i.e., user/addict identities). However, it also raises questions about the failure to find a contribution of previous admission, as predicted, which is inconsistent with the wider self-categorization literature (e.g., Blanz, 1999; Oakes et al., 1994). There are likely to be a number of reasons for this that are particular to the addiction context. It is not uncommon, for example, for people to seek treatment in different TC’s at different times and stay for different lengths of time; making it difficult to re-engage a particular TC identity. Some people might feel coerced into such treatment, by family or the criminal justice system, experience it as negative, or see it as a failure in their recovery journey. As these examples suggest, previous admission suggests a more complex course of recovery, which a simple count of previous admission is unlikely to capture. Thus, other measures would be useful to index the people’s predisposition to enact a TC identity to better understand its role in community treatment engagement.

In line with H3, our mediation analysis provided further support for the importance of (a) group memberships before treatment and (b) identification with the TC early in treatment, in protecting quality of life. What this suggests is that TC identification functioned as a mechanism through which to support people in the context of managing a very challenging life transition. There are various reasons why group membership, when it is a positive source of influence, can provide a basis for bonding with the TC; not least the fact that belonging to more groups is itself a psychological resource (see Jetten et al., 2015) and indicative of necessary practical social skills that makes engaging and

connecting with a group TC philosophy easier. The important advance, though, to the substance misuse literature is to highlight the importance of building and strengthening a specific treatment community identity *early* in recovery.

The failure to find an association between social relationships and the ARC is intriguing in light of previous research showing that social forms of capital are an important resource when it comes to supporting recovery outcomes (e.g., Granfield & Cloud, 2001; Groshkova et al., 2013; Laudet & White, 2008) and other research showing the importance of multiple group membership as a psychological resource in general (e.g., Jetten et al., 2015). With this sample, this failure suggests that a person's relationships with either individuals and social groups in the lead up to treatment were not particularly influential. As the ARC comprises 10 scales, factors other than social relationships (e.g., sobriety, physical health, housing and safety) may have played a more important role in the treatment transition. It is also the case that the absence of an association in early treatment does not rule out the contribution that these relationships might make later in a person's recovery journey as other research suggests (e.g., Cloud and Granfield, 2008; Laudet Morgen & White, 2006). As this was a somewhat unexpected finding it certainly warrants further exploration in future research.

Like many studies in this field, the present is not without its limitations. Greater interrogation of the wider nature of individual and group-based relationships would be important in future. As we highlight in the introduction, not all relationships are curative in supporting positive recovery outcomes, irrespective of their importance. To this end, recent research highlights the detrimental effects of social connections with using groups and individuals (Dingle, Stark, et al., 2015; Weston et al., 2018). Examining the effects that the composition of people's social networks make to recovery is important to gain a better understanding of the wider influence of social relationships and this is the subject of another paper involving this sample (Beckwith et al., 2018). It is also possible that self-

selection biases in treatment choice might have also influenced study findings. Recent research shows that attachment styles might predispose people towards particular forms of treatment, making them more likely to engage with others in that particular treatment context (Marshall, Albery, & Frings, 2018). The implication for the present study is that individual differences might be a factor in people's readiness to engage with others in the treatment community. These data were not collected as part of this study, but would certainly be important to consider in future research to determine the extent to which attachment and other styles of social interaction influenced our findings.

Measurement represents another limitation. Our index of identity centrality relied on a single item, largely for reasons of controlling survey length. While there is evidence that single items can be used effectively to index social identification (Postmes et al., 2013), there are more extensive scales of centrality that could be used in replicating these effects (see Cameron, 2004). Also related to measurement is the fact our study relied on self-report measures rather than more objective indices of substance use and social connections, and there are other indicators of recovery potential that could be used to assess the generalizability of our findings. Finally, our findings are based on a cross-sectional analysis, which limits any comment on the directionality of our effects. However, it is part of a larger longitudinal study that will be able to address this issue when data collection is complete.

## **Conclusion**

The present study confirms the important role that group membership and TC identification plays in treatment for substance dependence, but extends on previous research in three ways. First, it demonstrates the influence of existing group memberships early in treatment, highlighting the importance of understanding and working with client's social identities early in recovery. Second, it shows that identification with the TC is a vital mechanism through which to support quality of life in the profoundly challenging

transition to residential treatment. Third, it emphasizes the importance of internalizing a sense of oneself as in recovery early to facilitate a bond with the TC. The extent to which these social identities prove effective in keeping people in treatment for longer and supporting recovery has yet to be demonstrated. However, the present study, alongside others in the field, make it clear that a social identity analysis can help to bring us closer to achieving these outcomes.

## References

- Beckwith M, Best DW, Lubman DI, Dingle GA, Perryman C. 2015. Predictors of flexibility in social identity among people entering a therapeutic community for substance abuse. *Alcohol Treat Q.* 33: 93-104.
- Beckwith M, Best DW, Savic M, Haslam C, Bathish R, Dingle GA, Mackenzie J, Staiger P, Lubman DI. 2018. *Social Identity Mapping in Addiction Recovery (SIM-AR): Extension and application of a visual method.* Under review.
- Best DW, Beckwith M, Haslam C, Haslam SA, Jetten J, Mawson E, Lubman DI. 2016. Overcoming drug and alcohol addiction as a process of social identity transition: The Social Identity Model of Recovery (SIMOR). *Addict, Res Theory.* 24: 111-123.
- Best DW, Gow J, Knox T, Taylor A, Groshkova T, White W. 2012. Mapping the recovery stories of drinkers and drug users in Glasgow: Quality of life and its associations with measures of recovery capital. *Drug Alcohol Rev.* 31: 334-341.
- Best DW, Haslam C, Staiger P, Dingle GA, Savic M, Bathish R, et al. 2016. Social Networks and recovery (SONAR): Characteristics of a longitudinal outcome study in five therapeutic communities in Australia. *Therapeutic Communities: Int J Therapeutic Communities.* 37:131-139.
- Best DW, Lubman DI. 2017. Friends matter but so does their substance use: The impact of social networks on substance use, offending and wellbeing among young people attending specialist drug and alcohol treatment services. *Drugs: Educ Prev Polic.* 24: 111-117.
- Blanz M. 1999. Accessibility and fit as determinants of the salience of social categorizations. *Eur J Soc Psychol.* 29: 43-74.
- Brorson HH, Arnevik EA, Rand-Hendriksen K, Dickert F. 2013. Drop-out from addiction treatment: A systematic review of risk factors. *Clin Psychol Rev.* 33: 1010-1024.
- Buckingham SA, Frings, D, Albery IP. 2013. Group membership and social identity in addiction recovery. *Psychol Addict Behav.* 27: 1132-40.
- Cameron JE. 2004. A three-factor model of social identity. *Self and Identity.* 3: 239–262.



- Cloud W, Granfield R. 2008. Conceptualizing recovery capital: Expansion of a theoretical construct. *Subs Use Misuse*. 43: 1971-1986.
- Cruwys T, Dingle GA, Haslam C, Haslam SA, Jetten J, Morton, T. 2013. Social group memberships protect against future depression, alleviate depression symptoms and prevent depression relapse. *Soc Sci Med*, 98: 179-186.
- Darke S, Campbell G, Popple, G. 2012. Retention, early dropout and treatment completion among therapeutic community admissions. *Drug Alcohol Rev*. 31: 64-71.
- Day E, Copello A, Karia M, Roche J, Grewal P, George S, Haque S, Chohan G. 2013. Social network support for individuals receiving opiate substitution treatment and its association with treatment progress. *Eur Addict Res*. 19: 211-221.
- De Leon G. (2000). *The therapeutic community: theory, model and method*. New York: Springer
- DiClemente CC, Prochaska JO. 1998. Toward a comprehensive, transtheoretical model of change: Stages of change and addictive behavior. In Miller WR, N Heather, N, editors. *Treating Addictive Behaviors (2nd Ed)*. New York: Plenum, p. 3-24.
- DiClemente CC, Schlundt D, Gemmel L. 2004. Readiness and stages of change in addiction treatment. *Am J Addict*, 13, 103-119.
- Dingle GA, Cruwys TC, Frings D. 2015. Social identities as pathways into and out of addiction. *Front Psychol*. 6: 1795.
- Dingle GA, Stark C, Cruwys T, Best DA. 2015. Breaking good: Breaking ties with social groups may be good for recovery from substance misuse. *Br J Soc Psychol*. 54: 236–254.
- Doosje B, Ellemers N, Spears R. 1995. Perceived intragroup variability as a function of group status and identification. *J Exp Sol Psychol*. 31: 410-436
- Frings D, Collins M, Long G, Pinto IR Albery IP. 2016. A test of the Social Identity Model

- of Cessation Maintenance: The content and role of social control. *Addict Behav Rep.* 3: 77-85.
- Frings D, Albery IP. 2015. The Social Identity Model of Cessation Maintenance: Formulation and initial evidence. *Addict Behav.* 44: 35-42.
- Glei DA, Landau DA, Goldman N, Chuang Y-L., Rodríguez G, Weinstein M. 2005. Participating in social activities helps preserve cognitive function: an analysis of a longitudinal, population-based study of the elderly. *Int J Epidemiol.* 34: 864-871.
- Gleibs I, Haslam C, Haslam SA, Jones J. 2011. Water clubs in residential care: Is it the water or the club that enhances health and well-being? *Psychol Health.* 26: 1361-1378.
- Granfield R, Cloud W. 2001. Social context and "natural recovery": the role of social capital in the resolution of drug-associated problems. *Subst Use Misuse.* 36:1543-70.
- Groshkova T, Best D, White, W. 2013. The assessment of Recovery Capital: Properties and psychometrics of a measure of addiction recovery strengths. *Drug Alcohol Rev.* 32: 187-194.
- Haslam C, Cruwys T, Haslam SA. 2014. "The we's have it": Evidence for the distinctive benefits of group engagement in enhancing cognitive health in ageing. *Soc Sci Med.* 120: 57-66.
- Haslam C, Haslam SA, Jetten J, Bevins A, Ravenscroft S, Tonks J. 2010. The social treatment: Benefits of group reminiscence and group activity for the cognitive performance and well-being of older adults in residential care. *Psychol Aging.* 25: 157-167.
- Haslam C, Holme A, Haslam SA, Iyer A, Jetten J, Williams WH. 2008. Maintaining group membership: Identity continuity and well-being after stroke *Neuropsychol Rehab.* 18: 671-691.

- Haslam, C., Jetten, J., Cruwys, T. Dingle, G.A., & Haslam, S.A. 2018. *The new psychology of Health: Unlocking the social cure*. Oxford, UK: Taylor and Francis.
- Haslam SA, Jetten J, Postmes T, Haslam C. 2009. Social identity, health and well-being: An emerging agenda for applied psychology. *Appl Psychol Int Rev*. 58: 1-23
- Haslam SA, Reicher SD, Levine M. 2012. When other people are heaven, when other people are hell: How social identity determines the nature and impact of social support. In: Jetten, J, Haslam C. Haslam SA, editors. *The social cure: Identity, health, and well-being*. London & New York: Psychology Press. p. 157-174.
- Holt-Lunstad J, Smith TB, Layton JB. 2010. Social relationships and mortality risk: A meta-analytic review. *PLoS Medicine*, 7, 2-20.
- Iyer A, Jetten J, Tsivrikos D, Postmes T, Haslam SA. 2009. The more (and the more compatible) the merrier: Multiple group memberships and identity compatibility as predictors of adjustment after life transitions. *Br J Soc Psychol*. 48: 707-733.
- Jetten J, Branscombe NR, Haslam SA, Haslam C., Cruwys T, Jones JM, et al. 2015. Having a lot of a good thing: Multiple important group memberships as a source of self-esteem. *PLOS ONE*. 10: e0131035.
- Jetten J, Haslam C, Haslam SA. 2012. *The social cure: Identity, health and well-being*. London: Psychology Press.
- Jetten J, Haslam SA, Iyer A, Haslam C. 2009. Turning to others in times of change: Social identity and coping with stress. In: Stürmer S, Snyder M, editors. *The psychology of prosocial behavior: Group processes, intergroup relations, and helping*. Oxford, UK: Blackwell. p.139-156
- Joe GW, Simpson D, & Broome KM. 1998. Effects of readiness for drug abuse treatment on client retention and assessment of process. *Addiction*. 93: 1177-1190.

- Johnstone M, Jetten J, Parsell C, Dingle GA, Walter Z. 2016. Enhancing well-being of homeless individuals by building group memberships. *J Community Appl Soc Psychol.* 26: 421–438.
- Jones J, Jetten J. 2011. Recovering from strain and enduring pain: Multiple group membership promotes resilience in the face of physical challenges. *Soc Psychol Pers Sc.* 2: 239-244
- Kelly JF, Hoepfner B, Stout RL, Pagano M. 2012. Determining the relative importance of the mechanisms of behavior change within Alcoholics Anonymous: A multiple mediator analysis. *Addiction.* 107: 289-299.
- Laudet AB, Morgen K, White WL. 2006. The role of social supports, spirituality, religiousness, life meaning and affiliation with 12 step fellowships in quality of life satisfaction among individuals in recovery from drug and alcohol problems. *Alcohol Treat Q.* 24: 33-73.
- Laudet AB, White WL. 2008. Recovery Capital as Prospective Predictor of Sustained Recovery, Life satisfaction and Stress among former poly-substance users. *Subst Use Misuse.* 43: 27-54
- Litt MD, Kadden RM, Kabela-Cormier E, Petry N. 2007. Changing network support for drinking: Initial findings from the Network Support Project. *J Consult Clin Psych.* 75: 542-555.
- Longabaugh R, Wirtz PW, Zywiak WH, O'Malley SS. 2010. Network support as a prognostic indicator of drinking outcomes: The COMBINE study. *J of Stud Alcohol Drugs.* 71: 837-846.
- Marshall SW, Albery IP, Frings D. 2018. Who stays in addiction treatment groups? Anxiety and avoidant attachment styles predict treatment retention and relapse. *Clin Psychol Psychother.* 25: 525-531.
- Moshier SJ, McHugh RK, Calkins AW, Hearon BA, Rosellini AJ et al. 2012. The role of

- perceived belongingness to a drug subculture among opioid-dependent patients. *Psychol Addict Behav.* 26: 812-820.
- Oakes PJ. 1987. The salience of social categories. In: Turner JC, Hogg MA, Oakes PJ, Reicher SD, Wetherell MS, editors, *Rediscovering the social group: A self-categorization theory*. Oxford: Blackwell. p. 117-141.
- Oakes PJ, Haslam SA, Turner JC. 1994. *Stereotyping and social reality*. Oxford: Blackwell.
- Perryman P, Dingle GA. 2015. A systematic review of the methodologies used in research related to adult drug and alcohol rehabilitation in therapeutic communities published 2000-2013. *Therapeutic Communities: Int J Therapeutic Communities.* 36: 193-208.
- Postmes T, Haslam SA, Jans L. 2013. A single-item measure of social identification: Reliability, validity and utility. *B J Soc Psychol.* 62: 597-617.
- Ryan A, Holmes J, Hunt V, Dunlop A, Mammon K, Holland R, et al. 2014. Validation and implementation of the Australian Treatment Outcomes Profile in specialist drug and alcohol settings. *Drug Alcohol Rev.* 33: 33-42.
- Sani F, Herrera M, Wakefield JRH, Baroch O, Gulyas, C. 2012. Comparing social contact and group identification as predictors of mental health. *Br J Soc Psychol.* 51: 789-790.
- Sani F, Madhok V, Norbury M, Dugard P, Wakefield JRH. 2015. Greater number of group identifications is associated with healthier behaviour: Evidence from a Scottish community sample. *Br J Health Psychol.* 20: 466–481.
- Seymour-Smith M, Cruwys T, Haslam SA, Brodribb W. 2017. Loss of group memberships predicts depression in postpartum mothers. *Soc Psychiatry Psychiatr Epidemiol.* 52: 201-210.
- Steffens N, Cruwys T, Haslam C, Jetten J, Haslam SA. 2016. Social Group Memberships in Retirement are Associated with Reduced Risk of Premature Death: Evidence from a

- Longitudinal Cohort Study. *BMJ Open*. 2016. 6:e010164.
- Tajfel H, Turner JC. 1979. An integrative theory of intergroup conflict. In: Austin WG, Worchel S, editors. *The social psychology of intergroup relations* Monterey, CA: Brooks/Cole. p. 33-47.
- Turner JC, Hogg MA, Oakes PJ, Reicher SD, Wetherell MS. 1987. *Rediscovering the social group: A self-categorization theory*. Oxford, UK: Blackwell
- Timko C, Sutkowi A, Cronkite RC, Makin-Byrd K, Moos RH. 2011. Intensive referral to 12 step dual-focused mutual-help groups. *Drug Alcohol Depen*. 118: 194-201.
- Vanderplasschen W, Colpaert K, Autrique M, Rapp RC, Pearce S, Broekaert E, Vandeveldel S. 2013. Therapeutic communities for addictions: a review of their effectiveness from a recovery-oriented perspective. *Scientific World J*. Article ID 427817.
- Weston S, Honor S, Best D. 2018. A tale of two towns: A comparative study exploring the possibilities and pitfalls of social capital among people seeking recovery from substance misuse. *Subst Use Misuse*. 53: 490-500
- Zywiak WH, Neighbors CJ, Martin RA, Johnson JE, Eaton CA, Rohsenow DJ. 2009. The Important People Drug and Alcohol interview: Psychometric properties, predictive validity, and implications for treatment. *J Subst Abuse Treat*. 36: 321-330.

### **Figure captions**

1. Hypothesized mediation model showing relationships between group membership, TC identification, and recovery potential.
2. Path model depicting the direct effects of group membership on quality of life with TC identification as the mediating variable, controlling for severity and duration of addiction to the primary drug of concern.

*Note:* Dashed lines represent non-significant paths, correlations between the control variables are shown. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ;  $n=248$ .

**Table 1. Participant demographics**

<b>Variable</b>	<b>Count</b>
Previous TC admissions	
0	188
1	61
2	17
3	12
4-5	8
No data	21
Primary drug of concern	
Methamphetamines	117
Alcohol	101
Heroin	53
Cannabis	16
Other Opioids	10
Other	8
Benzodiazepines	2
Cocaine	0
Highest level of educational attainment	
Year 8 or below*	15
Year 9-11*	109
Year 12*	56
Technical/vocational certificate	79
Diploma	23
Bachelor degree	17
Graduate diploma	2
Post graduate degree	6
Accommodation prior to TC entry	
With family	133
With partner	25
With friends	44
With recovery peer	6
Other	23
Alone	65
No data	11
Employment status	
Unemployed	248
Employed	58
No data	1

*Notes.*  $n=307$ . \*Year refers to the number of years of school education with “Year 8 and below” indicating eight years or fewer in school.

**Table 2.** Means and standard deviations for key measures as a function of gender, age, and identified Indigenous heritage.

Measure	Gender		Age category		Indigenous heritage	
	Male	Female	< 30 yrs	≥ 30 yrs	Yes	No
No. Group Memberships (range= 0-6)	3.14 (1.67)	3.31 (1.64)	3.24 (1.59)	3.16 (1.69)	3.25 (1.85)	3.18 (1.64)
No. Important Individual Relationships (range=1-10)	4.85 (2.63)	5.12 (2.31)	4.94 (2.42)	4.93 (2.60)	3.96 (2.52)	5.01 (1.0)
TC Identification (range=1-7)	4.97 (1.29)	4.97 (1.13)	4.82 (1.16)	5.03 (1.30)	4.86 (1.01)	4.97 (1.27)
Recovery Centrality (range=1-7)	5.33 (1.16)	5.51 (1.05)	5.24 (1.07)	5.47 (1.16)	5.53 (1.20)	5.38 (1.13)
User Centrality (range=1-7)	4.76 (1.99)	4.87 (1.99)	4.50 (2.02)	4.94 (1.98)	4.33 (2.12)	4.82 (1.99)
Previous TC Admissions (range=1-5)	0.60 (1.02)	0.56 (1.06)	0.29 (0.72)	0.73 (1.13)	0.30 (0.80)	0.61 (1.05)
ARC Total (range=1-50)	35.31 (9.79)	32.71 (9.96)	35.21 (8.98)	34.08 (10.37)	37.76 (8.07)	34.22 (9.97)
Quality of Life (range=0-10)	4.36 (2.70)	4.15 (2.69)	4.37 (2.51)	4.24 (2.80)	4.83 (2.98)	4.24 (2.67)
Substance Use Frequency (range=0-30 days)	19.58 (9.97)	19.56 (10.99)	18.71 (10.54)	20.03 (10.13)	16.75 (11.84)	19.83 (10.12)
Substance Use Duration (range=1-50 years)	12.06 (8.92)	12.18 (9.44)	6.77 (5.10)	14.85 (9.42)	8.95 (6.88)	12.33 (9.16)

Note: No.=Number, yrs=years, ARC=Assessment of Recovery Capital



**Table 3.** *Uncentered means, standard deviations, and inter-correlations between key variables*

<b>Variable</b>	<b>Mean</b>	<b>SD</b>	<b>1.</b>	<b>2.</b>	<b>3.</b>	<b>4.</b>	<b>5.</b>	<b>6.</b>	<b>7.</b>	<b>8.</b>	<b>9.</b>
1. No. group memberships	3.19	1.66									
2. No. individual relationships	4.93	2.53	0.40***								
3. TC identity	4.96	1.25	0.16**	0.09							
4. Recovery centrality	5.56	1.72	0.07	0.03	0.54***						
5. User centrality	4.79	1.20	0.01	-0.01	0.03	0.07					
6. No. previous TC admissions	0.58	1.03	-0.11	0.01	0.1	0.05	0.06				
7. Quality of life	4.28	2.70	0.13*	0.06	0.23***	0.11	-0.04	0.05			
8. ARC Total	34.47	9.88	0.02	0.06	0.25***	0.20***	-0.24***	0.03	0.45***		
9. Substance Use Frequency	19.61	10.26	-0.07	-0.02	0.01	0.03	0.19**	0.02	-0.06	-0.02	
10. Substance Use Duration	12.12	9.06	-0.02	-0.02	0.04	0.08	0.09	0.16*	-0.05	-0.06	0.16*

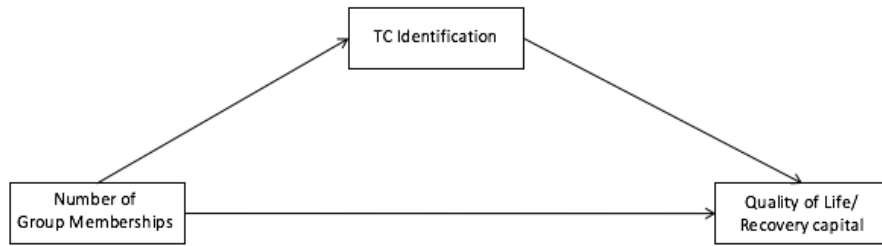
*Note.*  $N=307$ , \* $p \leq .05$ , \*\* $p \leq .01$ , \*\*\* $p \leq .001$ . No. = number, TC=therapeutic community, ARC=Assessment of Recovery Capital

**Table 4.** Results of hierarchical regression predicting TC identification.

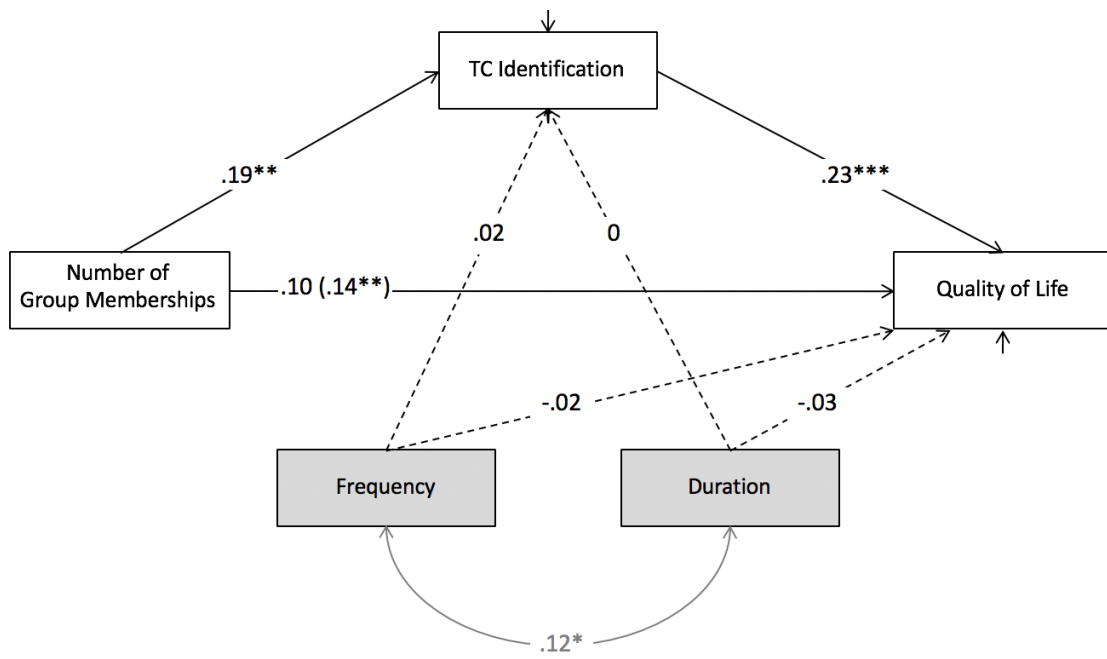
Variable	TC Identification					
	Step 1 ( $\Delta R^2 = .07^{**}$ )			Step 2 ( $\Delta R^2 = .25^{***}$ )		
	<i>b</i>	SE	$\beta$	<i>b</i>	SE	$\beta$
Education (years)	-.14	.04	-.21**	-.07	.04	-.11
Age	.02	.01	.14	.01	.01	.06
Gender	.04	.17	.01	-.09	.14	-.04
Substance Use Frequency	0	.01	0	0	.01	-.01
Substance Use Duration	-.01	.01	-.05	-.01	.01	-.04
No. TC Admissions	-	-	-	.08	.07	.07
Recovery Centrality	-	-	-	.38	.04	.52***
User Centrality	-	-	-	-.01	.03	-.01

Note.  $N=307$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

No. = Number, TC=therapeutic community



**Figure 1.**



**Figure 2.**