



Published in final edited form as:

Addict Disord Their Treat. 2014 December 1; 13(4): 179–189. doi:10.1097/ADT.0000000000000039.

The Role of the Social Environment in Alcohol or Drug Relapse of Probationers Recently Released from Jail

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Abstract

Objectives: Many individuals involved with the criminal justice system also meet criteria for a substance use disorder. Social support has been identified as an important factor in alcohol and drug relapse, and also for individuals who are incarcerated. The purposes of this study were to describe personal characteristics and the social networks of adult male probationers with substance use disorders and test how changes in social networks related to alcohol or drug use after release from jail.

Methods: Fifty adult male probationers who were recently incarcerated (60 to 210 days prior to screening) were recruited from a large Southwest Probation and Parole Division office, and were administered a single assessment that assessed demographic information, social networks, and quantity and frequency of alcohol and drug use before and after incarceration.

Results: In this sample there was an over-representation of ethnic minorities, higher rates of unemployment, lower educational levels, and lower median income than national averages. Results showed that there were significant changes in social networks from pre- to post-incarceration. Additionally, changes in social networks significantly predicted substance use after release from jail, even after controlling for substance use prior to incarceration, and the percentage of social network members who were heavy drug users mediated percent days abstinent from alcohol and drugs from pre- to post-incarceration.

Conclusions: Social networks and social support may operate as dynamic factors in relapse, and may be a target for intervention for adult males with substance use disorders being released from jail.

Keywords

Criminal justice; relapse; social networks; social support; substance use

Introduction

In 2009, more than seven million Americans were involved currently with the criminal justice system (CJS) in some capacity,¹ and nearly 70% of those involved with the CJS met

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criteria for an alcohol or other substance use disorder (SUD). The positive relationship between substance use and illegal behaviors² suggests that decreasing the probability of relapse may decrease the incidence of illegal behaviors and arrests. In 2004, Witkiewitz and Marlatt³ published an integrated and updated model of relapse for persons with SUDs in the general (non-CJS specifically) population. In this model, social support is categorized as a distal factor, which implies that social support is a static variable influencing an individual's relapse. Others, however, have stressed the importance of the social network as a dynamic predictor of substance use that interacts with individual and environmental factors,^{4,5} such as social networks. Social support relevant to alcohol can be categorized into two constructs - general support and alcohol-specific support, and both have been found to be predictive drinking outcomes.^{6,7} Alcohol-specific support has been linked to motivation in predicting drinking outcomes⁸ and can be broken down into network members' drinking and network members' responses to the participant's drinking.

Research also has shown that spouses, families, friends, and coworkers play a role in coping with incarceration and prisoner reentry,⁹ and relationships may suffer as a result of substance use.^{10,11} Other studies have found that unstable social networks, such as marriages or employment, were associated with drug relapses of parolees released from prison.¹²⁻¹⁴ These findings provide evidence that social support plays a role in the lives of recently incarcerated offenders, and may suggest a beneficial area for intervention for this population.

The majority of the research studies supporting the components of Witkiewitz and Marlatt's³ model have not reported results in terms of court-mandated individuals versus individuals self-referred to substance abuse treatment. Due to the overlap of individuals court-mandated to treatment and those voluntarily seeking treatment for SUDs (approximately 38 to 53% of individuals in treatment,¹⁵ it is difficult to differentiate results from outcome studies sampling from substance abuse treatment centers. It is unknown how components of relapse models, such as social support, generalize to the CJS population, and identifies a need to test these components with substance abusing individuals who are supervised by the CJS. The current study attempted to address some of these gaps in the literature and had three aims: (a) describe the social networks of alcohol or drug offending male probationers, including the number of alcohol or drug users in the network, number of abstainers, frequency of substance use by network members, and support for abstinence or substance use; (b) examine changes in social networks from the time prior to incarceration until 60 to 210 days after release; and (c) test the relationship between social networks and substance use in mediation models, and using changes in social network variables to predict substance use.

Methods

Recruitment

Participants were recruited from a Probation and Parole Division office in a large Southwest city. Posters were displayed in waiting rooms, at the entrance, and in the male restrooms, and take-home flyers were available.

Inclusion criteria—Potential participants were screened prior to consent. The inclusion criteria included: (a) gender (only males were recruited); (b) current probation involvement; (c) recent incarceration, defined for this study as incarceration in jail from 60 to 210 days prior to screenings; (d) reason for incarceration or probation was related to alcohol or drugs; (e) alcohol or drug use 30 days prior to incarceration; and (f) moderate or high substance use involvement.

Exclusion criteria—Individuals were excluded for the following reasons: (a) not fluent in English (all measures were administered in English); (b) if recent incarceration was imprisonment or was in a treatment facility: this exclusion criterion helped to generalize outcomes to individuals with short-term incarceration; (c) if recent incarceration was for six or less days; (d) current psychotic symptoms; and (e) gross cognitive impairment..

Participants

Descriptive information for participants ($N = 50$) are provided in Table 1. Also presented in Table 1 are the mean number of days of incarceration; mean number of days since release from jail; mean percent days abstinent from both alcohol and drugs (PDA) and percent days of heavy drinking (PDH) from T1, T2, and T3 time periods (time periods are described below).

Measures

National Institute on Drug Abuse-Modified Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) was administered to screen out individuals low to no substance use involvement. For the purposes of this study, the three months prior to incarceration were assessed with this screening tool. The ASSIST has been used as a prescreening tool in medical health settings and has shown strong Cronbach's alpha reliability for assessing alcohol (0.75), marijuana (0.86), opiates (0.87), and amphetamines (0.88).¹⁶

The Mini-Mental Status Examination (MMSE) was used to identify cognitive impairment.¹⁷ A cutoff score below 20 points indicates cognitive impairment. Smith, Horton, Saitz, and Samet¹⁸ found support for the use of the MMSE in assessing cognitive functioning in substance abusers, but reliability scores for the MMSE were not reported.

The CASAA Demographic Interview form¹⁹ was used to collect demographic information as a self-report measure. The individual's fluency in English was assessed on the screening form as an exclusion criterion.

The Important People Drug and Alcohol interview (IPDA)²⁰ is an adapted version of the Important People Interview.²¹ An adapted version of the IPDA assessed social networks for the 30 days prior to incarceration (T1), the first 30 days post-release from jail (T2), and the time from 31 days after release to the day of the study assessment (T3). Social networks were assessed in chronological order (first T1, then T2 and T3) for all participants.

The adapted Form-90 has been used to assess alcohol and drug use 90 days prior to the individual's most recent use, and has shown consistent results for retests with the same interviewer, with correlation coefficients of 0.93-0.99 for the recent alcohol and drug use

assessment sections.²² A pattern format, calculated by quantity and frequency of drinks and illicit drug use, was used to assess PDA and matched the time periods of the IPI.

To corroborate reported abstinence or drug use, a urine analysis (Six Drug (THC/Coc/Opi/Amph/Mamph/Benzo) Dip Test) was performed on-site to detect recent drug use.

Prescription drug use reported by the participant was assessed, but was excluded from the participant's total days of drug use, unless he reported taking the medication other than as prescribed.

Procedures

When an individual called the study phone number, the research staff described the study and went over the screening questions with the individual. If eligible, the individual came in for his assessment appointment, research staff answered any questions, and the participant signed an informed consent. Before the assessments were administered, blood alcohol content (BAC) was tested using a digital breathalyzer ($n=43$) or BAC strips ($n=3$) to ensure a BAC less than 0.02, then proceeded to the assessment interview, completed the urine analysis, and the participant was compensated. All participants signed an informed consent and study procedures were reviewed and approved by the Institutional Review Board at the University of New Mexico.

Data Analysis

Potential issues with the distributions of each of the social network variables were examined for non-normality and transformed using an arc sin square root function. Results for the second hypothesis did not change using the transformed data; therefore all results reported are using the original data.

Hypothesis testing—To answer the first aim, describing the social networks of alcohol or drug offending probationers, subscales of the IPI were scored (e.g., mean network size, mean percentage of social network that were heavy drinkers). The second aim of the study examined if and how social networks changed over time from T1 to T2 to T3. Hierarchical linear modeling (HLM) and paired sample t tests were used to determine whether there were significant changes in the social network variables across the three time periods on the following variables: (a) total number of members in social network, (b) percentage of network members who were heavy alcohol or drug users, and (c) percentage of network members who were users of any kind (i.e., alcohol and/or drug users). The third aim examined social network variables listed in the second aim as mediators of the pathway between T1 and T2 PDA, and T2 and T3 PDA.²³ Next, difference scores of social network variables and PDA between T1 and T2, and T2 and T3 were computed. Regression models were used to analyze social networks as dynamic predictors of substance use from the computed difference scores between T1 and T2 social network variables to predict T2 substance use. Similarly, the difference scores between T2 and T3 social network variables were used to predict T3 substance use. The reciprocals of each model also were tested.

Results

No participant scored below 20 on the MMSE; therefore all participants' data were included in the analyses. Results were consistent with previous studies²⁴⁻²⁶ in that there were no discrepancies between urine analysis results and self-reported substance use. Only one participant refused to do the urine analysis. A flowchart depicting reasons that individuals were excluded from the study are shown in Figure 1.

Social Network Variables

The variables from participants' social networks were averaged from each of the time periods (T1, T2, and T3), and are presented in Table 2. There were no hypotheses for this aim, and all analyses were exploratory.

Changes in Social Networks

As predicted, using HLM and paired *t* tests, there were significant changes in most of the social network variables across time, and between many paired time points (using paired *t* tests; see Table 3). All HLM models were consistent with the paired *t* tests for percentage of social networks that were heavy drinkers and heavy drug users, which helps to reduce the chance of a Type I error associated with the multiple analyses of the paired *t* tests. Results from the HLM models for social network size and percentage of networks that were users of any kind did not converge, which likely is related to the quadratic change in these variables. The effect sizes for these within-subject changes in social network variables also are presented in Table 3.

Associations Between Social Networks and Substance Use

Mediation models—Because PDA and all of the social network variables were significantly related across time, social network variables were tested as mediators of T1 to T2 PDA, and T2 to T3 PDA. Percent heavy drug users was a significant mediator for T1 to T2 PDA (see Figure 2), but was not a significant mediator for T2 to T3 PDA. No other social network variables were significant mediators of T1 to T2 PDA, or T2 to T3 PDA.

Dynamic predictor models—Regression models were used to examine if the differences between social network variables in consecutive time periods predicted the PDA in the subsequent time period. All models controlled for the PDA from the previous time period, and all differences were calculated using the variable from the earlier time period (T1 or T2, respectively) subtracted from the later time period (T2 or T3). For example, the difference between the social network sizes of T1 and T2 (as calculated by T2 network size minus T1 network size) was used to predict T2 PDA after controlling T1 PDA (see Figures 3 and 4). Only the significant results are reported; all other social network variables were not significant.

Percentage of networks that were heavy drinkers: In models predicting T2 and T3 percent heavy drinkers, T1 and T2 percent heavy drinkers, respectively, were controlled for and were significant ($\beta = .487, p < .001$; $\beta = .816, p < .001$, respectively). Changes in T1 to T2 PDA significantly predicted T2 percent heavy drinkers ($\beta = -.128, p < .05$) after

controlling for T1 percent heavy drinkers. Changes in T2 to present PDA did not significantly predict T3 percent heavy drinkers in the social network.

Percentage of networks that were heavy drug users: In the models predicting T2 and T3 PDA, T1 and T2 PDA, respectively, were included and were significant ($\beta = .490, p < .001$; $\beta = .711, p < .001$, respectively). Changes in T1 to T2 percent heavy drug users significantly predicted T2 PDA ($\beta = -.458, p < .01$) after controlling for T1 PDA. Similar to percent heavy drinkers, the difference between T2 and T3 percent heavy drug users was not a predictor of T3 PDA.

When predicting T2 and T3 percent heavy drug users, the percent heavy drug users from the previous time period was significant in each model ($\beta = .429, p < .001$; $\beta = .876, p < .001$, respectively). Changes in T1 to T2 PDA significantly predicted T2 heavy drug users ($\beta = -.251, p < .01$) after controlling for T1 heavy drug users; changes in T2 to T3 PDA were not significantly related to T3 percent heavy drug users in the social network.

Percent users: T1 ($\beta = .491, p < .001$) and T2 ($\beta = .707, p < .001$) PDA were significant in the models predicting T2 and T3 PDA, respectively. Changes in T1 to T2 percentage of networks who were users of any kind significantly predicted T2 PDA ($\beta = -.531, p < .01$) after controlling for T1 PDA; the same was not true for changes T2 to T3 percent users.

Differences from T1 to T2 PDA significantly predicted T2 percent users ($\beta = -.326, p < .01$), even after controlling for T1 percent users ($\beta = .656, p < .001$). T2 to T3 changes in PDA did not predict T3 percent users.

Discussion

The purpose of this study was to examine the demographic characteristics and social networks of adult males on probation for an alcohol or drug related charge who had been recently released from jail, to determine if and how social networks of this group changed before and after incarceration, and to see if and how social networks were related to substance use before and after incarceration for this population. The results highlighted the severity of this population, including the over-representation of minorities, the high rates of unemployment, the low educational level, and the median annual income below the nation's poverty level.²⁷ All social network variables changed significantly between at least one pair of time periods, and many of the changes in T1 to T2 social network variables predicted PDA after release from jail. Additionally, percentage of network members that were heavy drug users mediated the relationship of PDA from pre- (T1) to post-incarceration (T2).

The first aim of this study was to examine the demographic information and social networks of adult male probationers with SUDs recently released from jail for an alcohol or drug related offense. The average size of social networks ranged from six to seven individuals, which is comparable to network sizes from Project COMBINE.²⁸

The second aim was to determine if social networks changed from before to after incarceration. The results indicated that every social network variable changed from pre- (T1) to post-incarceration (T2), which is similar to social networks changing as a result of

engaging in substance use treatment.²⁸ The changes seen in social networks suggest that social networks, and therefore social support, may not be a static factor, as proposed in Witkiewitz and Marlatt's³ model of relapse.

The third aim of the presented study was to examine the association between social network variables and substance use. The percentage of network members that were heavy drug users was a significant mediator of PDA between pre- (T1) and post- incarceration (T2); there may be two reasons why this was the only significant mediator of PDA. First, having network members who are only light or moderate drug users may not impact individuals' substance use as much as network members who use more often or in greater quantity. Second, on average, social networks had more heavy drug users than heavy drinkers, which suggests that additional research on heavy drug using network members may be informative. However, this is the first study to look at the percentage of social network members that were heavy drug users as a mediator of PDA, and replication is needed.

When examining social network variables as dynamic predictors of substance use, there were significant associations between changes in social network variables from pre- (T1) to post-incarceration (T2) when predicting post-incarceration PDA, and their reciprocals. How individuals' social networks change, particularly concerning social network members' substance use patterns, appeared to have an influence on how often individuals used alcohol or drugs in the month after they were released from jail. The time immediately following release from jail appeared to be a particularly important time regarding the influence of social networks on substance use, and stresses the importance of preparing males with SUDs for reentering their environments prior to them leaving jail.

The current study has a number of limitations. First, the small sample size may have resulted in low power for many of the analyses. Second, the second and third aims included multiple analyses; this fact coupled with a low sample size increases the chance of Type I error.²⁹ All analyses reported stemmed from preliminary hypotheses, and analyses were exploratory and should be replicated to corroborate these findings. Third, because recruitment was on a volunteer-basis, the study sample may be self-selected and may not have included certain types of individuals. A fourth limitation was that changes in individuals' social networks were not tracked to determine if changes were attributable to certain members leaving the social network and others coming in, or if changes were because of behavioral modifications by network members. Fifth, all assessments, excluding the tests of blood alcohol content and urine analyses, were based on self-report. Additionally, all assessments were completed retrospectively, which makes their results subject to the biases of individuals' memories.

The present study also has a number of strengths. First, participants in this study included underrepresented individuals: substance users involved in the CJS. Little research to date has examined the association between social networks and substance use specifically for individuals involved in the CJS, despite their large representation in general substance use treatment seeking research samples.

The current study provided evidence of the disparities and disadvantages faced by males with SUDs when leaving jail. Brief motivational interventions have been found to be helpful

for decreasing alcohol and drug use,³⁰ and may help bolster the motivation of males with SUDs being released from jail to change their social networks and decrease their substance use. A second area for future research that may be informative is mechanisms of behavior change, specifically how individuals reduce their substance use after getting out of jail. Because substance use significantly decreased after being released from jail, examining how other factors may interact with social networks and in turn influence substance use may help inform future interventions. The current study began to examine the links between social networks and substance use for the CJS population, but replications of the current findings are needed. Future studies that assess social networks and substance use more proximally may be informative and help to provide more reliable results, which can help improve the quality of treatment that men with SUDs get both while incarcerated and when they are released.

Conclusion

Results of the current study showed that adult males' social networks do change after incarceration in jail, and that social networks influence individuals' substance use, which supports the conceptualization of social networks and social support as dynamic predictors of substance use. Further, changes in social networks from before to after incarceration predicted substance use after release, but have little influence as time continues. Therefore, if adult males do not change their social networks after the first month of being released from jail, they are less likely to change their networks and are more likely to continue their pattern of use. The results suggest that the time immediately following release from jail may be a critical time during which to intervene, which may have a positive effect on the individuals' substance use, a reduction in their criminal activity, and a decreased probability of being arrested and going back to jail.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

This research was supported by internal grants from the Office of Graduate Studies, Graduate and Professional Student Association, and the Department of Psychology at the University of New Mexico; and NIAAA grant T32-AA018108. The authors also would like to thank Emily Flegal, Rebecca Gius, Kayla LeJune, and all of the research participants for their assistance with this project.

Conflicts of Interest and Source of Funding

This research was supported by internal grants from the Office of Graduate Studies, Graduate and Professional Student Association, and the Department of Psychology at the University of New Mexico; and NIAAA grant T32-AA018108. Both authors declare that they have no conflicts of interest.

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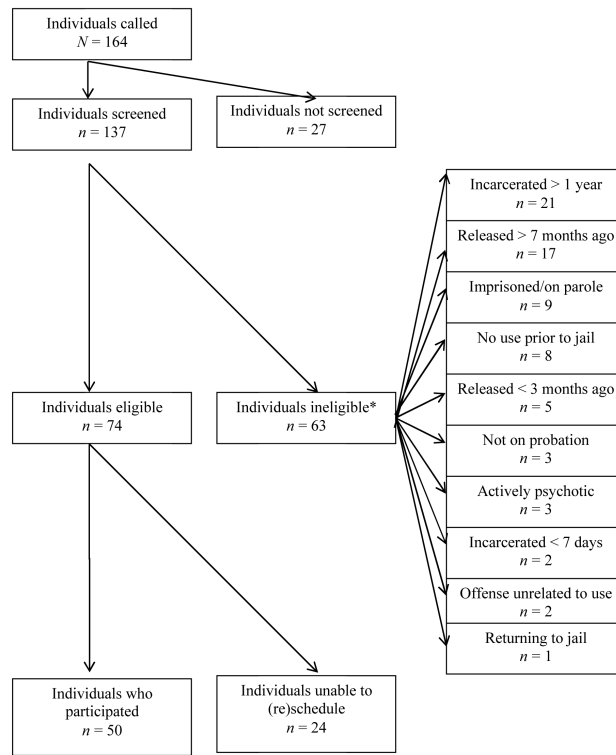


Figure 1.
Flow chart of individuals who were included in and excluded from the study.
Note. *Some individuals were ineligible for multiple reasons.

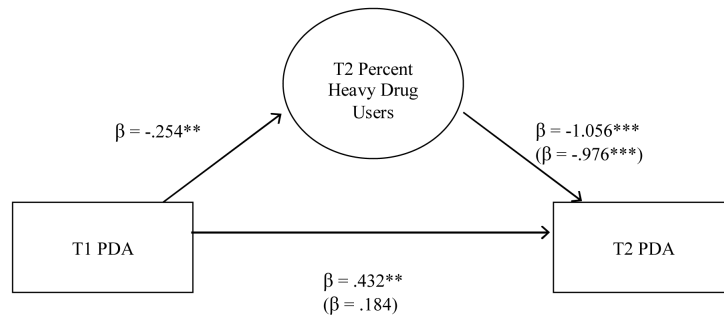


Figure 2. Mediation model of percentage of social networks that were heavy drug users from T1 to T2 (using the Baron and Kenny (1986) method).
Notes. * $p < .05$; ** $p < .01$; *** $p < .0001$.

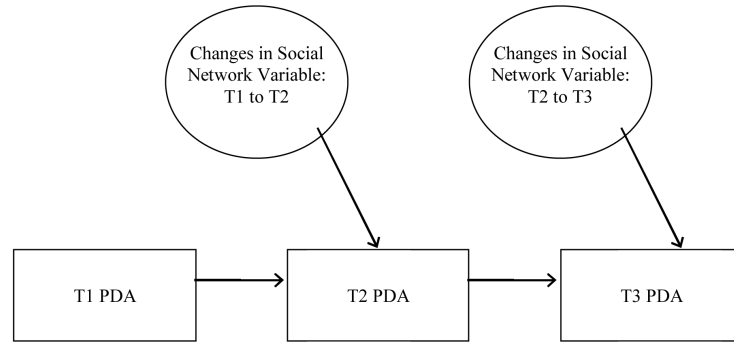


Figure 3. Changes in T1 to T2 and T2 to T3 social network variables as predictors of T2 and T3 PDA, respectively (after controlling for T1 and T2 PDA, respectively)

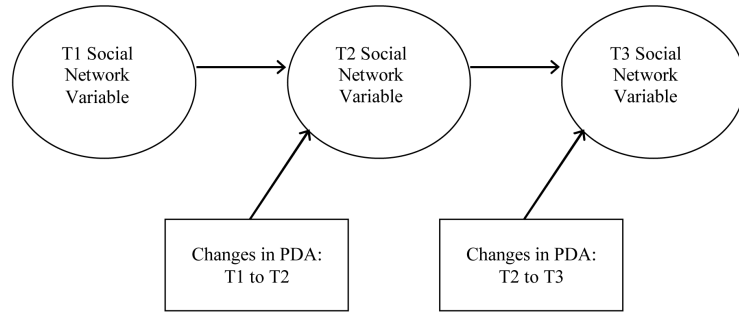


Figure 4. Changes in T1 to T2 and T2 to T3 PDA as predictors of T2 and T3 social network variables, respectively (after controlling for T1 and T2 social network variables, respectively).